

TRACK PLAN for a switching layout



Sound-equipped
HO diesel tested

June 2009

www.ModelRailroader.com

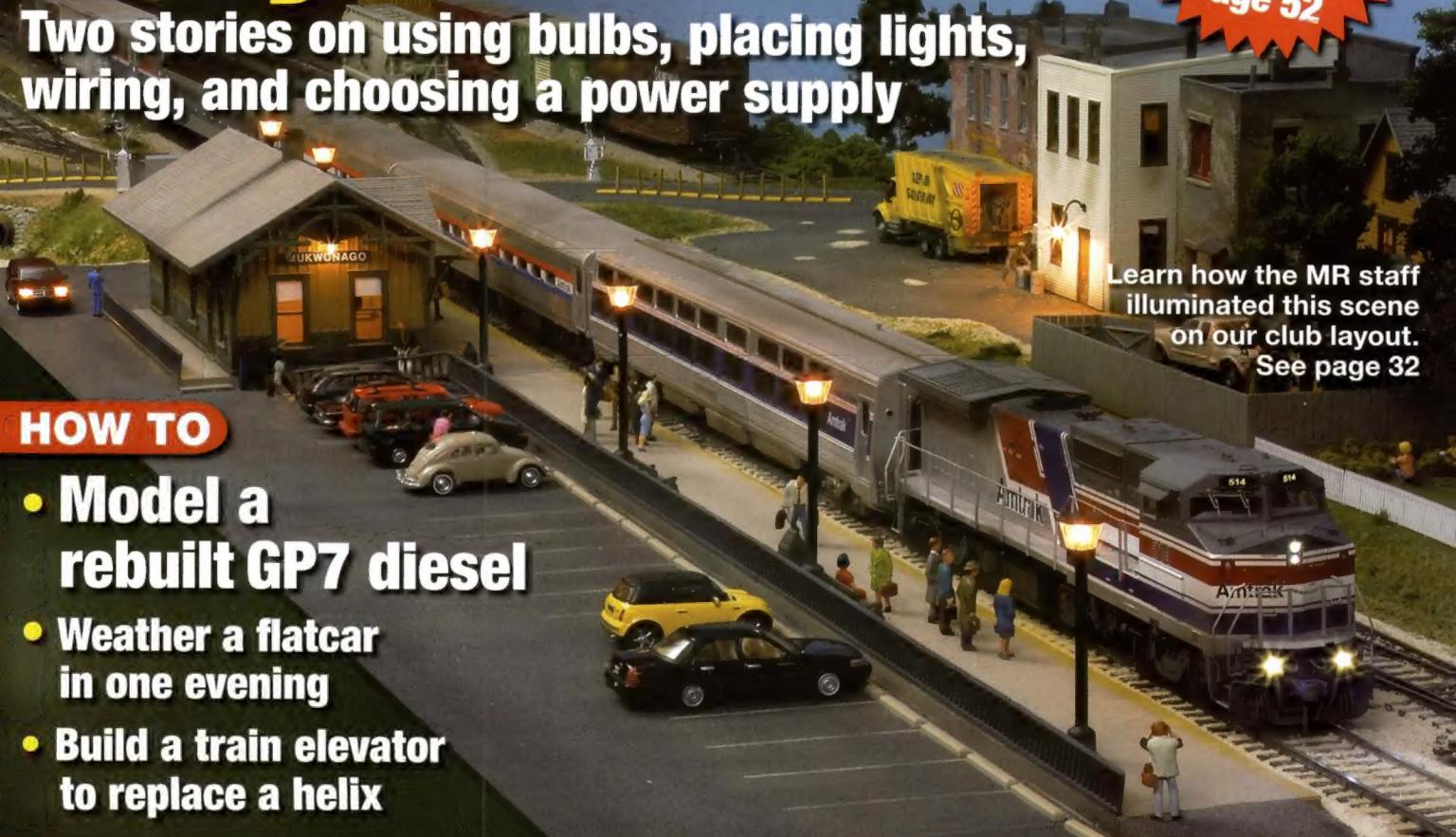
Model Railroader®

How to light a layout scene

Two stories on using bulbs, placing lights, wiring, and choosing a power supply

WOW!
Spectacular
mountain
layout!
Page 52

Learn how the MR staff
illuminated this scene
on our club layout.
See page 32



HOW TO

- Model a rebuilt GP7 diesel
- Weather a flatcar in one evening
- Build a train elevator to replace a helix

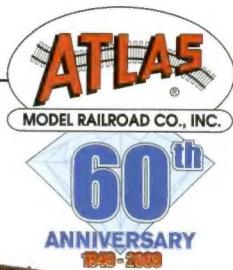
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www.atlasrr.com/HOFreight/hotrackcleaningcar.htm

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Model Railroader

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Coming next issue: Place and time mean everything on Mark Preussler's HO scale layout depicting the Soo Line in 1954. *Cody Grivno* photo

Rapido Trains Inc. Project Update

HO Scale "Oh, So Steamy!" Steam Generator Car

We started production on our Steam Gennies earlier this year. In March, Jason and Dan discovered that the car body was missing a water filler hatch on one side! As the five people in the world who would care that it was missing include Jason and Dan, they decided to pull all the shells from production to add the hatch.

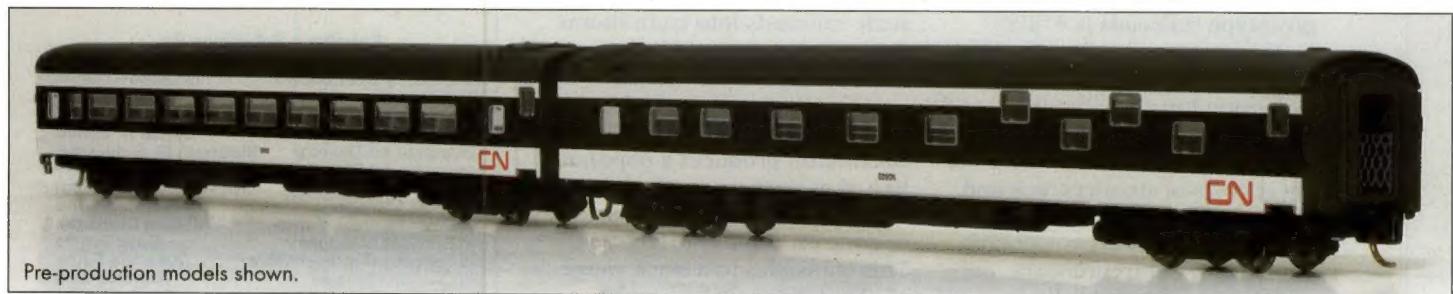
Jason (our company president) is obsessed with Steam Generator Cars... he wanted to buy a full-size Steam Genny but his wife told him where he could put it. Because of the hatch delay, the first Steam Generator Cars will arrive in June. The photo at right is a one-second exposure of our Steam Generator Car in action. Looks real, eh?



N Scale Panorama Line Passenger Cars

As this is our first foray into N scale, we found that some of our details, such as the stirrups, needed to be retooled to meet our exacting standards for detail and accuracy. Production of the Lightweight Coach and Duplex

Sleeper has been underway since January, and the first Panorama Line passenger cars are on the way to our warehouse at press time. Check out the etched metal end gate on that sleeper. Beauty.



Pre-production models shown.

HO Scale Oddballs

The first batch of "Oddball" Super Continental Line passenger cars is on its way to our warehouse at press time and should arrive in stores very soon. As there are so many paint schemes and car numbers, it will take a few months for all of them to arrive.



The Osgood Bradley Project

We're almost finished our tooling corrections to our first car, the HO scale Lightweight 10-Window Coach, and then we'll begin production. You can expect the NH, B&M and BAR cars to arrive in the fall. Order in advance with any good hobby dealer to make sure you don't miss out!



Pre-production model shown.

More info about all of these products and more can be found on our web site and in our free online newsletter, the Rapido Telegraph. Come have a look!



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RAPIDO

From the Editor

Narrow gauge lingo

Neil Besougloff, Editor



One of the more dramatic layouts we've featured in *Model Railroader* recently is on page 52 in this issue. Jerry Merker's O scale narrow gauge layout pushes the needle on the "wow meter."

Scenery aside, new hobbyists sometimes get confused about narrow gauge layouts and their associated lingo. Narrow gauge simply means that the rails are closer together than "standard" gauge, which on North American prototype railroads is 4'-8 1/2".

Narrow gauge railroads were built everywhere, but most lines were found in rugged mining and logging locales, especially in the Western United States, where the lower costs of smaller track and trains better matched the business plans of cigar-smoking 19th century entrepreneurs.

Most narrow gauge lines spiked their rails 3 feet apart, but some used other dimensions. Narrow gauge locomotives and rolling stock were built shorter and squatter, somewhat in proportion to the rail spacing. Capacities were likewise smaller. A narrow gauge boxcar could carry about a third of the load of a standard gauge car.

On model railroads, narrow gauge is expressed by the modeling scale followed by the letter "n" and the track gauge. Jerry's layout is On3 – "O" is the scale, "n" is for narrow gauge, and "3" is for three scale feet between the rails.

There can be more than one narrow gauge in the same scale. Both 3-foot and 2 1/2-foot gauges are popular among O scale narrow gauge modelers.

Narrow gauge modelers work in all scales, way down to eagle-eyed Nn3 scale modelers. Many hobbyists find O and S narrow gauge especially to their liking, since tight curves, short trains, and diminutive rolling stock allow modelers to fit O and S scale railroads into train rooms that otherwise would be best suited for HO and N scales.

A final point of confusion centers on O scale narrow gauge. Bachmann produces a popular line of narrow gauge O scale trains and rolling stock that operate on standard HO track. This translates to a track gauge of about 2 1/2 scale feet, or 30 inches. Bachmann uses the term On30 to describe those trains; *Model Railroader* uses the term On2 1/2 instead.

Why? We use it for consistency, otherwise we would be waffling back and forth between foot designations and inch designations when describing different gauges. Regardless of which term you prefer, On30 and On2 1/2 are the same thing.

Now that you're up to speed on narrow gauge, turn to page 52 for a look at Jerry's layout.

NEIL BESOUGLOFF

Contributing to *Model Railroader*

We welcome contributions from our readers, including articles, photographs, and prototype drawings. For detailed information on submitting material to MR, contact our editorial associate Eric Stelplug at 262-796-8776, ext. 583, or mrrmag@mrrmag.com. *Model Railroader* assumes no responsibility for the safe return of unsolicited material. We assume unsolicited material is intended for publication by Kalmbach Publishing Co. unless otherwise noted. We assume letters, questions, news releases, and club news items are contributed gratis.

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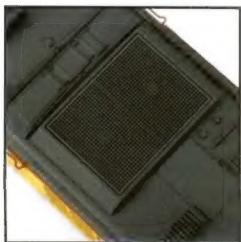
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88664	Union Pacific Gas Turbine, with tender #58
88665	Union Pacific Gas Turbine tender only, painted, no road number

HO GAS TURBINE

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229.98*
299.98*
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89.98*

News & Products



HO scale Southern Pacific AC-5 Cab-Forward steam locomotive. Broadway Limited Imports is releasing its AC-4 and AC-5 Cab-Forwards as part of its BlueLine, putting the locomotive's detailing and sound effects in a lower-priced, direct-current model. The locomotive has a five-pole skew-wound can motor with dual flywheels, an eight-pin Digital Command Control decoder socket, and four traction tire-equipped drivers. The plastic and die-cast metal model sells for \$399.99.

NMRA gearing up for Hartford National

The National Model Railroad Association's annual convention is scheduled for July 5-11 at the Connecticut Convention Center in Hartford, Conn. The convention includes modeling clinics, rail museum and prototype visits, a

silent auction, tours of nearby model railroads, and non-railroad-themed events for family members.

More information about the convention, including a calendar of events, lodging information, and registration, can be found on the Web at hn2009.org.

The National Train Show, which takes place alongside the convention, is open to the public from July 10-12. The show features hundreds of vendors and manufacturers, modeling demonstrations, a huge Lego train display, a children's play area, and 48,000 square feet of modular layouts. More information on the show is available online at nationaltrainshow.org.

Model railroad manufacturers traditionally unveil their newest and most exciting products at the National Train Show. *Model*



The Connecticut Convention Center in Hartford, Conn., will be the site of the National Model Railroad Association's 2009 convention, July 5-11. Photo courtesy of Connecticut Convention Center

Railroader will cover the announcements with an expanded News & Products listing on our Web site the week of the convention. We will also bring you highlights of the show in our October issue.

► Highlighted in this issue

10 N scale Model Railroader 75th boxcar by Micro-Trains

11 Searails Alco RS-2 diesel body shell in Z scale

12 Fifth Avenue Car Shops HO scale 40' PS-2 boxcar

16 N scale Milwaukee, Racine & Troy containers by Kato

16 List of manufacturers in this month's News & Products

Two clubs mark 60-year milestone

Two model railroad clubs on opposite sides of the country have something in common: both recently announced they are celebrating 60th anniversaries.

The Glendale (Calif.) Model Railroad Club, based in Glendale, Calif., was founded in April 1949 and has about 35 active members. The club layout, called the Verdugo Valley Lines, is a 25 x 40-foot HO scale representation of the Southern Pacific between Los Angeles and Bakersfield, including the Tehachapi Loop. It includes both standard gauge and narrow gauge lines, as well as an electrified section. The layout was featured in twice in *Model Railroader*, in December 1960 and May 1996.

The layout may be history by the time of publication, though, because the club expects to vote to demolish it and start over with a new track plan this year. The move is planned in order to upgrade to Digital Command Control, as well as to appeal to new members interested in helping construct the layout. The club holds monthly open houses and maintains a Web site at gmrrc.org.

Also marking its 60th year is the Northern Virginia Model Railroader Club, in the Washington, D.C. suburb of Vienna, Va. The club has met for the last 30 years in the 19th-century Washington & Old Dominion RR station in Vienna.

The club's HO scale layout models the Southern Ry. in North Carolina from Spencer/Salisbury to Asheville, over Black Mountain. When the original Western North Carolina RR layout was finished in 1969, then-Southern Ry. president Graham Claytor presented the club with a golden spike.

Today, about 70 members operate the current 20 x 60 foot, multi-deck, Digital Command Control-equipped layout. The group holds open houses and operating sessions monthly. More information is available at nvmr.org.

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Automatic train elevator



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N scale Model Railroader 75th anniversary boxcar. Micro-Trains Line is helping celebrate *Model Railroader* magazine's 75th birthday with this N scale car. The 50-foot double-plug-door boxcar is patterned after a prototype painted with the magazine's anniversary logo by the Wisconsin & Southern RR. The ready-to-run N scale car comes with magnetic knuckle couplers for \$21.30 at Micro-Trains retailers.

HO scale locomotives

Electro-Motive Division GP60M and GP60B diesel locomotives.

Atchison, Topeka & Santa Fe (cab or booster unit, three road numbers each); Burlington Northern Santa Fe (cab in Heritage II scheme, booster in Heritage I, three numbers each); and Maersk (cab unit only, one number available). Eight-pin Digital Command Control socket, McHenry scale magnetic knuckle couplers, and see-through fans. \$99.98. September 2009. Ready-to-Roll. Athearn Trains

Electro-Motive Division F7

diesel locomotives. Lehigh Valley (Cornell Red; A units available with four road numbers, B units with three) and Western Pacific (Perlmutter Green; A units only, two numbers in each of two stripe variations). Etched-metal grills, prototype-specific details, and Kadee magnetic knuckle couplers. Direct-current model with Digital Command Control socket, \$99.95; with DCC and sound, \$169.95. Ready-to-run. InterMountain Railway Co.



Southern Pacific Daylight

Electro-Motive Division E7A diesel locomotive. Dual-mode Digital Command Control with sound, cab interior with crew figures, magnetic knuckle couplers, and prototype-specific details. \$249.98. Ready-to-run. Proto 2000 from Walthers.

HO scale freight cars



Assorted hopper car kits.

Custom-decorated Bowser and Stewart kits. H-43 100-ton hopper: Bessemer & Lake Erie; 70-ton offset-side triple hopper: Bessemer & Lake Erie and Wheeling & Lake Erie; GLa two-bay hopper: Union RR; and 55-ton fishbelly hopper: Western Maryland ("Fast Freight" scheme). Twelve car numbers each. Magnetic knuckle couplers. \$13.95. Bessemer Hobbies

Forty-foot World War II war-emergency boxcars. Atchison, Topeka & Santa Fe; Chicago & North Western; and Nickel Plate Road. Six car numbers each. Wire grab irons, metal wheelsets, and Kadee scale magnetic knuckle couplers. \$29.95. Fall 2009. Ready-to-run. InterMountain Railway Co.

GATX two-compartment, two-dome tank car kit. Cast-resin frame, running board, and two-piece tank; etched-metal stirrup steps; and Kadee magnetic knuckle couplers. \$49 each plus \$7.50 shipping. Southern Car & Foundry

HO scale passenger cars

Chicago "L" car kits. Available in series 2000, 2200, 2600, and 3200. Unpowered kit includes one-piece resin shell, chassis with details cast in place, and tinted window inserts. \$55. Island Modelworks LLC



New York Central 1948 20th Century Limited passenger cars.

Bay series 22-roomette sleeper; Bridge series 4-double-bedroom, 4-compartment, 2-drawing-room sleeper; River series 10-roomette, 6-double-bedroom sleeper; and Port series 12-double-bedroom sleeper. Detailed interiors, metal wheels with electrical pickups for interior lighting kits (sold separately), and Proto-Max magnetic knuckle couplers. \$64.98. Ready-to-run. Wm. K. Walthers Inc.

HO scale structures

Midtown Apartments. Kit includes laser-cut white acrylic parts with tab-and-slot construction. Printed window shades and sidewalks are also included. \$120. Four-story add-on kit, \$65. Custom Model Railroads

Three-stall wood roundhouse. Laser-cut wood kit based on Canadian Pacific prototype. Can be built with one, two, or three stalls. Laser-cut walls, cast-resin windows, and positionable doors. \$109.95. Kanamodel Products



Pre-Fab structure kits. Sonny's Super Service gas station (pictured), Fresh Market, Planters Feed

► Calendar

June 18-20: 2009 O Scale

National Convention. Student Union Building, Towson University, Baltimore, Md. www.oscaleeast.com

June 27: Ardenrail 2009

(National Model Railroad Association British Region convention).

Arden School, Station Road, Knowle, Solihull, West Midlands B93 0PT, United Kingdom. www.ardenrail.co.uk

July 5-11: 25th National

Garden Railway Convention.

Denver Marriott Tech Center, Denver, Colo.

www.2009ngrc.com

August 4-8: 2009 National

Association of S Gaugers

National Convention.

Mariott St. Louis Airport, St. Louis, Mo.

www.nasg.org

Sept. 16-19, 2009: 29th National

Narrow Gauge Convention.

Doubletree Hotel, Colorado

Springs, Colo. 29nng.com

Oct. 22-25, 2009: 25th annual

iHobby Expo.

Donald E. Stephens Convention Center, Rosemont, Ill.

www.ihobbyexpo.com

Nov. 21-22, 2009: World's

Greatest Hobby On Tour.

Western Wash. Fairgrounds, Puyallup, Wash.

www.wghshow.com

and Supply, and Main Street Mercentile. Modeler applies included roofing, accessories, and dry-transfer signs to factory-assembled walls. Prices to be announced. Woodland Scenics

Wigwam-style wood chip

burner. Laser-cut understructure and base detailing, corrugated metal siding, and mesh top. \$42.95. Sidetrack Laser

HO details and accessories



Positionable hitches for 57-foot spine cars. Flat-packed, undecorated, etched-metal kits, six per



Z scale Alco road switcher shell. Searails' new RS-2 body shell fits Micro-Trains Line's Z scale GP locomotive chassis. The plastic shell is created by the rapid-prototyping technique, in which a computer-controlled machine builds a 3-D object layer by layer. The shell has full surface detail, horn, lenses in all lights, and openings for body-mounted couplers. The unpainted shells are priced at \$65 each.

pack. Available with three H-01 hitches and three H-03s, or three H-02s and three H-03s. \$32.50. MLE Scale Models



92-foot railroad tugboat kit.

Cast-resin construction. Includes pewter detail parts (tire bumpers, mast, bitts, anchor, fire monitor, and searchlight), plastic railings, window glazing, and glass bead running lights. \$98.50. Frenchman River Model Works

N scale locomotives

Electro-Motive Division GP30

and GP35 diesel locomotives.

New paint schemes: GP30: Atchison, Topeka & Santa Fe (blue and yellow freight warbonnet); Chessie System (Baltimore & Ohio reporting marks); Louisville & Nashville; and Penn Central. GP35 Phase 1a: Reading Co., Southern Pacific, and Western Pacific (one road number available). GP35 Phase 1b: Ann Arbor, Guilford (two numbers), Springfield Terminal reporting marks, and Ohio Central (two numbers). Three numbers unless noted; also available undecorated.

Dual brass flywheels, directional lighting, and Accumate magnetic knuckle couplers. Direct-current model, \$119.95; with Digital Command Control and sound, \$154.95. June 2009. Ready-to-run. Atlas Model Railroad Co.

Electro-Motive Division SD45-2

and SD45T-2 diesel locomotives.

SD45-2: Atchison, Topeka & Santa Fe (Bicentennial paint scheme, three road numbers available); Burlington Northern Santa Fe (Heritage I scheme, two numbers); and Seaboard System (three numbers). SD45T-2: St. Louis Southwestern (Cotton Belt) (Bicentennial scheme, one number), Larry's Truck Electric Service (six numbers). Etched-metal details and Micro-Trains magnetic knuckle couplers. \$119.95. Ready-to-run. InterMountain Railway Co.

N scale freight cars

50-foot Pullman-Standard PS-1

double-door boxcar.

Atchison, Topeka & Santa Fe (large herald and "Ship and Travel" slogan); Chicago, Burlington & Quincy; New York Central ("Early Bird" paint scheme); Rock Island (blue); St. Louis-San Francisco ("Ship it on the Frisco" slogan); and Western Maryland (speed lettering). Two car numbers each. Etched-metal running boards, scale profile brake wheel, and McHenry magnetic knuckle couplers. \$18.98. Ready-to-run. Athearn Trains



HO scale Pullman-Standard 40-foot PS-1 boxcar kit. Fifth Avenue Car Shops is offering this custom-decorated Accurail single-door steel boxcar kit. The car is available painted for the Illinois Central and Chicago, Burlington & Quincy. It features Accumate magnetic knuckle couplers and Youngstown doors and ends. The models sell for \$14 each or \$40 for four, plus \$9 shipping.

20,700-gallon-capacity tank car. General American Marks Co. (GATX reporting marks; black-and-white or black, white, and yellow paint schemes), Dow Chemical, Monfort Packing, Relco Tank Lines, and Quality Liquid Feeds. Detailed body, see-through end walks, and Accumate magnetic knuckle couplers. \$24.95; undecorated, \$18.95. July 2009. Ready-to-run. Atlas Model Railroad Co.

BNSF Ry. Gunderson Maxi-Stack III five-unit well car. With 2005 "Swoosh" paint scheme. Two differently numbered sets available. \$99.95. DeLuxe Innovations

Assorted freight cars. BC Rail 61-foot bulkhead flatcar with covered wood loads (two car numbers available), \$22.35. Denver & Rio Grande Western 50-foot combination-door boxcar, \$21.65. St. Louis-San Francisco (Frisco) 89-foot tri-level open auto rack (TTRX reporting marks) with working end ramps, \$28.95. Comet Rice Mills three-bay covered hopper, \$19.15. All cars have magnetic knuckle couplers and are ready-to-run. Micro-Trains Line Co.

N scale structures

Merchants Bank & Trust Co. Kit includes laser-cut white acrylic parts with tab-and-slot construction. Printed window shades and sidewalks also included. \$95; eight-story add-on kit, \$50. Custom Model Railroads

S scale locomotives



McCabe Lumber Co. gas-electric boxcab speeder. Kit includes laser-cut basswood, plywood, and cardstock; brass and cast white metal details; decals; drivers; sheet-brass frame; and North West Short Line wheelsets. \$199.95. B.T.S.

S scale freight cars



Evans 100-ton gondola kit. Based on Southern Iron & Equipment Co. prototype. Unpainted kit includes urethane castings, hidden weight, and brass and white metal details. Decals, trucks, and couplers not included. \$69.95. B.T.S.

O scale locomotives

Alco C-424 diesel locomotive. Apache Ry., Canadian National, CP Rail, and Reading Co. (phase 1, new road numbers). Two road numbers available. Dual-flywheel-equipped motors, prototype-specific body style, and selectable green or white classification lights. Unpowered model (numbered differently from powered models), \$239.95; Gold series with Digital Command Control and Quantum QSI sound, \$479.95. Ready-to-run. Atlas O

O scale freight cars

40-foot 1937 Association of American Railroads single-door boxcar. Bessemer & Lake Erie (two car numbers), Florida East Coast, Lackawanna, and Nickel Plate Road (two numbers). Four car numbers available unless otherwise noted. Also available in Minneapolis & St. Louis two-pack and undecorated. Etched-metal running boards, wire grab irons, and magnetic knuckle couplers. \$67.95 per car; \$135.90 per two-pack. June 2009. Ready-to-run. Atlas O

O scale passenger cars

40-foot Harriman baggage/postal head-end car. Cast-resin kit includes one-piece body, one-piece cast underframe, laser-cut acrylic windows, brake details, and cast brass steps. \$125 each plus \$10 shipping. Southern Car & Foundry

Scenery



Corn Belt photo backdrop. Represents mature corn fields over Continued on page 16

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► Club cars



HO scale Overland Western Lines 40-foot gondola. Custom-decorated Accurail kit. Magnetic knuckle couplers. \$20 each, \$38 for two, plus \$7 shipping. To order: Darin Umlauf, 2020 Grandview Dr., Slinger, WI 53086. Information: owlrr.org



O scale ex-troop-sleeper express cars. Custom-decorated Weaver Models car offered by Baltimore Society of Model Engineers, Baltimore & Ohio or Railway Express Agency. Die-cast metal floor and rubber diaphragms. \$65 plus shipping (\$8 for the first car and \$4 for each additional). Maryland residents add \$3.90 sales tax per car. Print order form from www.oscaleeast.com/OrderingForm.pdf and mail it to: Baltimore O Scale Society LLC, P.O. Box 14, Baldwin, MD 21013



HO scale Clinchfield RR 50-ton radial-end hopper. Atlas Trainman car custom-decorated for the Carolina-Clinchfield chapter, National Railway Historical Society. Magnetic knuckle couplers. Four-car set, \$54.95. Ready-to-run. For more information or to order, contact Joe Zyla, Great Valley Co., P.O. Box 148, Lahaska, PA 18931, or e-mail greatvalleyco@comcast.net

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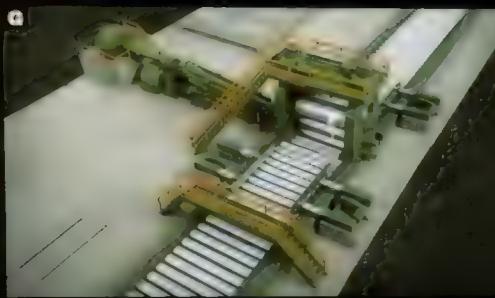
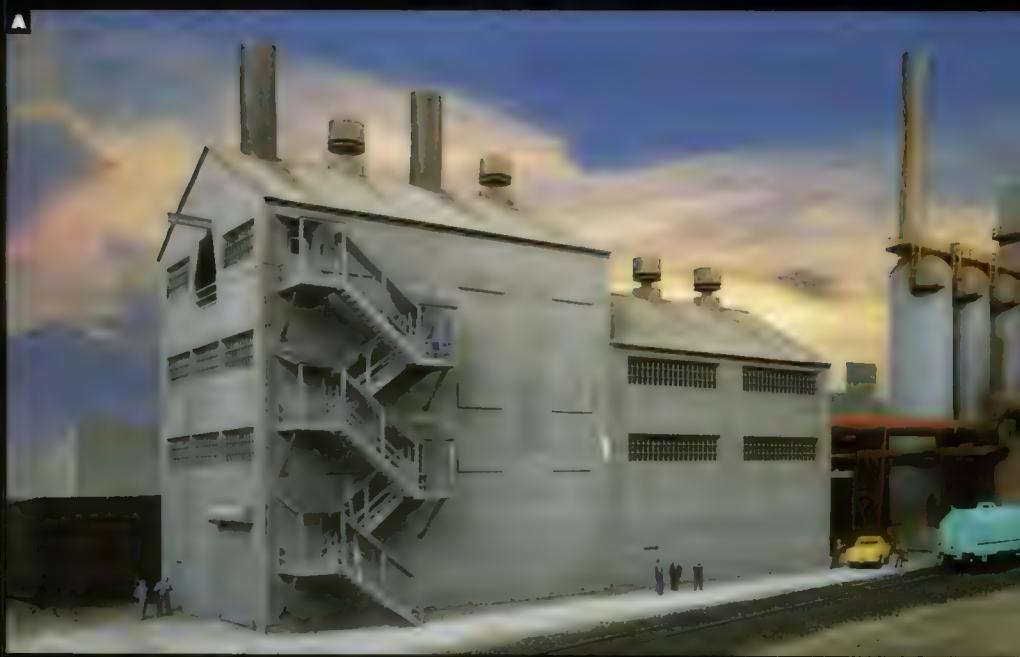
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N scale Milwaukee, Racine & Troy intermodal container. For a limited time, Kato USA is offering its N scale 53-foot containers in a paint scheme honoring *Model Railroader* magazine's 75th anniversary. The containers bear the road name of MR's club layout, have magnetic linkages for secure stacking, and come in a two-pack for \$29.

Continued from page 12

seven scale feet high. Seamlessly connects to other kits. HO and N scale are 53 inches long, O scale 93 inches. N or HO scale, \$15.95; O scale, \$39.95. BPH Enterprises

Multiple-scale structures



A To Z Used Cars. HO or N scale. Laser-cut basswood and microplywood kit with peel-and-stick doors, windows, roofing, and details. Kit can be built on variety

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Chesapeake & Ohio trust plate decals. HO scale. Twelve pairs of trust plates available in each set (six pair suitable for cars bought in the 1930s and six pair suitable for cars bought in the 1940s). \$2.49, postage included. Virginia customers must add sales tax. Great Decals

Assorted decals. Available in HO and N scales. Limited-release graffiti sheet, \$9. BNSF Ry. 2005 logo freight cars, Kansas City Southern *Southern Belle* modern diesels, Railbox boxcars (RBOX and ABOX reporting marks, circa 1975-1984), and Iowa Co-op hoppers (RREX and RRRX reporting marks): HO scale \$6.50, N scale \$5.25. Microscale Industries

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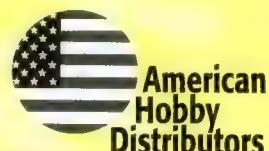
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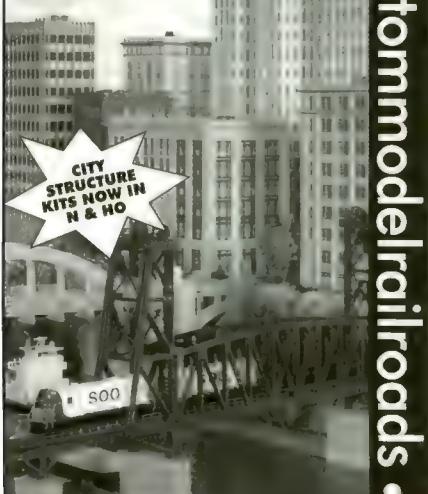
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Model Railroader executive editor Andy Sperandeo explained how he completed a freight house with these shadow boxes in the April 2009 issue.

Freight-door shadow boxes

Thank you for the feature on the Milwaukee Road freight house in part four of the "Build the Beer Line" series in the April 2009 issue of *Model Railroader*.

As I am currently working on structures for my own layout, the information regarding the open freight-door shadow boxes was of particular interest to me.

One of my structures, a food distribution facility, has two freight doors roughly parallel to the edge of the layout. I had been pondering how to suggest an interior with more than just a few figures and a forklift when your article came along and offered a simple solution.

When I do install my own shadow boxes, I may use pictures of a warehouse interior or perhaps a mirror to suggest depth.

John Anderson
Mississauga, Ontario, Canada

Operating sitting down

I enjoyed the article "Operating Sitting Down" by Paul Dolkos in the April 2009 issue of *Model Railroader*. I've operated my small shelf switching layouts while sitting down on an office chair for some years now, partially motivated by my age of 76, but mainly in search of comfort. It definitely makes the sessions more enjoyable.

Bob Miller
Urbana, Ill.

Polyester backdrop clouds

I wanted to express my thanks for the great April 2009 issue of *Model Railroader*. I have been a subscriber since before the 25th anniversary edition so I've learned a lot from MR.

The magazine certainly attracts talented artists and technicians who provide the most interesting

information and tidbits for the reader to digest.

One of the items that caught my attention was the Workshop tip "Can't paint backdrops? Try spun polyester clouds." I lack the artistry to produce clouds. Mine don't even come close to resembling nature.

Now I can get out my cloud images and begin stretching pieces of spun polyester.

Lawrence A. Gueller
Legend Lake, Wis.

Tony's April fools joke

As soon as I receive an issue of *Model Railroader*, I thumb through it quickly to assess the contents. As is also my practice, I pause at the Trains of Thought column to scan through it.

As I read Tony Koester's plan to tear down his Nickel Plate layout, I think my heart stopped!

Being a long-time reader of MR, a thought quickly came to me. What month is this issue?

Seeing that it was the April issue, I knew what was going on before I got to the end of the column. Well done! You got me!

Ed Irons
Wheeling, Ill.

Correction

The gauge was listed incorrectly for the San Juan Car Co. turnouts pictured in April's News & Products section on page 14. The turnouts are On3. — Ed.

Comments, suggestions, and additional information on MR articles and departments are welcome in this column. Every comment will be read, but not all can be printed or answered. Make your statement in 300 words or less, and send it to Railway Post Office, *Model Railroader* magazine, P.O. Box 1612, Waukesha, WI 53187, or e-mail rpo@mrmag.com. Please include your name, city, and state.



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A home computer and digital photography make it easy to publish an interesting "company" newsletter for your operators. Alan Saatkamp photo

Newsletters to inform and entertain your guests

Having friends over to operate my HO scale Wisconsin-Dakota RR is a lot of fun, so I decided to report the railroad's ongoing activities to my guests and operators with a prototype-style newsletter.

My first effort, *Points from the Junction*, was named after a division point on my model railroad. It provided information about operating sessions and kept my operators up to date about recent changes on the railroad, such as the arrival of new locomotives and rolling stock. I also found my newsletter was a great way to recognize and thank my friends for their special contributions.

Points from the Junction began with a modest two pages of single-spaced text. I published it three times in one year and distributed copies prior to operating sessions.

A move back to South Dakota gave me the opportunity to build a new model railroad. This time I've combined elements of the Wisconsin & Southern (WSOR) which interchanges traffic with another favorite regional railroad, the Dakota, Minnesota & Eastern (DM&E). During the new layout's planning process, I decided to rename the newsletter *Prairie Ponderings* to capture more of the Midwest's granger railroad flavor.

I publish *Prairie Ponderings* quarterly, and it still offers news of

the model railroad. But I've given it another dimension by using modeler's license to bend reality for my purposes. By blending real events with the layout activities, the newsletter adds realism.

For example, when model DM&E boxcars became available, my railroad's management announced the new arrivals and explained how these new cars would generate additional revenue. Likewise, when model WSOR grain hoppers showed up, their acquisition was announced with a note that they were assigned to haul corn to an on-line ethanol plant in Milton, Wis.

My friends and operators continually offer help and useful suggestions to improve the railroad, so I recognize their contributions in the newsletter. In the process, I add appropriate titles to enhance their credibility. Thus, Tim's comments about potential improvements to the yard are attributed to Davis Junction Yardmaster Tim Smith. And my mentor Gary Freseman's recommendation for a crossover also recognizes him as a consultant. After all, that's the role Gary has ably fulfilled on my last three layouts. Everyone enjoys seeing their names in print and being realistically woven into the fabric of the W-D RR.



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Information Desk

Safety suggestions are credited in the same manner as their prototype counterparts, including a photo of the employee at work.

It's also fun to report on events that occur during operating sessions. When a crew shortage forced the superintendent (me) to operate trains, an appropriate headline proclaimed that a labor shortage led to management operation of some trains.

Over time, my improved computer skills have turned the newsletter into a monthly project. Digital images now add color. To top it off, my son Matt created a classy new masthead.

Prairie Ponderings is now an electronic communication sent to more than 60 friends across a dozen states and Canada. Most of these recipients have operated on my layout at various gatherings.

The newsletters also provide an excellent record of the railroad's history. In addition, the coverage provides a timeline of my layout.

If you enjoy writing and want to keep your friends up to date, consider publishing a newsletter. It's a chance to spotlight your efforts and add an additional measure of enjoyment to the World's Greatest Hobby. — *Alan Saatkamp, Harrisburg, S.D.*



Steam wrecking cranes came in many sizes, but they all share a similar internal cab layout for operation with a two-man crew. Don Sims photo

I've just finished building a Tichy 120-ton wrecking crane kit and a boom car. Since it's a steam crane, I'd like to know where the coal and water were stored to keep it running? I've seen photos of these cranes at wreck sites, but seldom see a coal tender.

Ralph Symington, Groveland, Mass.

I found the answer to this question in an old Industrial Brownhoist steam crane catalog in our David P. Morgan Memorial Library.

Industrial-Brownhoist built its 120-ton crane with a squat, vertical boiler centered at the rear of the cab. The heavy hoist machinery was placed over the center pivot to help balance the machine.

If you consider the boom as the front, the left rear corner of the cab was occupied by a 500-gallon water tank, and the right rear corner had a coal bunker that held about a ton of coal. A roof hatch allowed the crane to be filled at a

locomotive coaling tipple. Depending upon how much work the crane was actually doing, this water and coal supply could last for quite some time.

Steam cranes normally required a two-man crew: one man operated the hoist following hand signals from the wreckmaster on the ground, while a second man tended the boiler as a fireman. Two or three additional helpers worked on the ground to adjust the outriggers and prepare for lifts.

Most steam wreckers had a small tender nearby for supplies. If needed, refueling was handled by a bucket brigade that passed buckets of coal up to the roof hatch. — *Jim Hediger, senior editor*

Send your questions about prototype railroading to Information Desk, *Model Railroader* magazine, P.O. Box 1612, Waukesha, WI 53187, or e-mail proto@mrmag.com. We regret we can't answer all the questions we receive.



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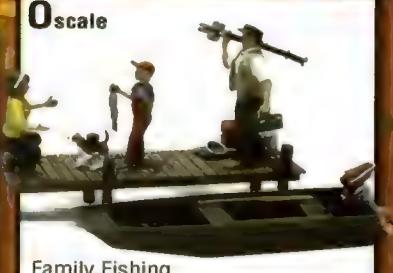
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Greg Wright's layout room includes this emergency exit through a ground-level window concealed by a backdrop on a window shade.

How safe are your guests in your railroad room?

We spend a lot of time in our railroad rooms, and in an emergency we could get out blindfolded, but what about our guests? In most cases, our operating sessions occur at night and may involve five or more friends and guests. These visitors have varying knowledge of our layout room and the maze we've created to cram the most railroad and operation possible into our space.

If the power goes out, the layout owner won't have a problem navigating in the darkness. However, guests are also plunged into darkness, and few will know the maze nearly well enough to get out. The risk of serious injury, especially from a duckunder entrance, is high. And, in the confusion, prized models could be damaged as someone feels their way out. Since many model railroads are built in basements, the safe path out of the house becomes even more treacherous in the dark.

Fortunately, there's an easy, low-priced solution. Residential exit lighting that turns on auto-



Greg disassembled his emergency lighting unit to separate the lamps. One illuminates the layout room, while this one is wall-mounted to light the clear path to the outside.

matically when the power goes out is a common item at home improvement stores. Many of these compact lighting units simply plug into a convenient outlet, and use low-voltage lamps any modeler can install and wire to provide light to get everyone to safety. It only takes one or two of these handy units to provide sufficient emergency illumination to cover most home layouts and their surroundings.



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Workshop

I prefer the lighting units that include adjustable lamps that can be aimed to illuminate a safe exit path, but any light is better than no light. In some locations, a rechargeable flashlight that plugs into a wall outlet and turns on if the power goes out will do the trick.

I purchased a dual-light unit at my local home improvement store for \$40. After separating one of the low-voltage lamps from the base unit, I mounted the base on the wall to illuminate the layout room, the route to the primary exit door, and my emergency exit. I extended the low-voltage wiring through the layout room wall and positioned the second light on the outside of a door frame to illuminate the safe path from the layout room exit, through the attached garage, to the outdoors.

An alternate exit is also important. In addition to the normal entry door, my layout room also has an emergency exit through a window at the other end. Alternate exits are less common in deep basements, but a window big enough to squeeze through in an emergency can be your best friend

if something happens and the primary exit is blocked.

Having an emergency exit need not take away from the layout space. I use a backdrop painted on a wide window shade, a light-weight building flat, and some plastic piping to mask my emergency exit.

The location of the exit is marked with a red "WINDOW EXIT HERE" sign on the edge of the layout, and a sturdy, low bench under the layout provides a step to make egress easier. I consider the scenery in this area to be expendable since anyone using this emergency exit will probably cause some damage in the few seconds it would take to open the exit and climb out. However, that's insignificant in the face of life safety.

As a 24-year veteran officer in my city's fire department, I'm more aware of these personal safety issues than most modelers. Fire safety is a high priority around my home and something that everyone should be more aware of. — *Greg Wright, Assistant Fire Chief and Emergency Management Coordinator, Olympia, Wash.*

Wood kit preparation. From personal experience, I've learned that a little preparation makes it much easier to build laser-cut wood structures. Before I begin any trimming or construction, I use a $\frac{1}{2}$ " paintbrush to apply a coat of indoor sanding sealer on both sides of the thin plywood walls. After the sealer is dry, I lightly sand each sheet with 600-grit emery paper.

These smooth, sealed surfaces make a better bond with the stick-on adhesives used for the window sills and trim. And when it's time to finish the structure, the sealer reduces the amount of paint that soaks into the wood to keep from raising the grain or warping the parts. Using the sealer inside and out also protects the model from moisture that can warp the walls. — *Bruce Petty, Dunsmuir, Calif.*

I acquired an Ambroid Boston & Maine open-platform wood coach kit that's at least 40 years old. The wood is in good shape, so where do I start and what kind of glue do you recommend?

Michael B. Shavelson, Passaic, N.J.

These popular craftsman kits were made of excellent kiln-dried basswood. Since the wood parts were unaffected by their long storage, the kit can be assembled as shown in the original instructions. Use a new, sharp hobby knife blade to trim the various parts to size

without crushing the wood. When it comes to assembling wood kits, I prefer Titebond Original Wood Glue, which is sold by most hardware and woodworking suppliers.

— *Jim Hediger, senior editor*

Workshop will pay \$25 for published tips. Send your modeling and layout-building questions and ideas to Workshop, *Model Railroader* magazine, P.O. Box 1612, Waukesha, WI 53187, or e-mail workshop@mrmag.com. We regret we can't answer all the questions we receive. There is no payment for questions; tips are paid for upon publication.

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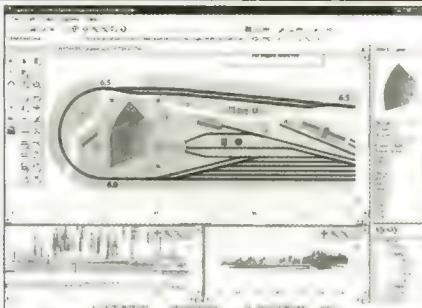
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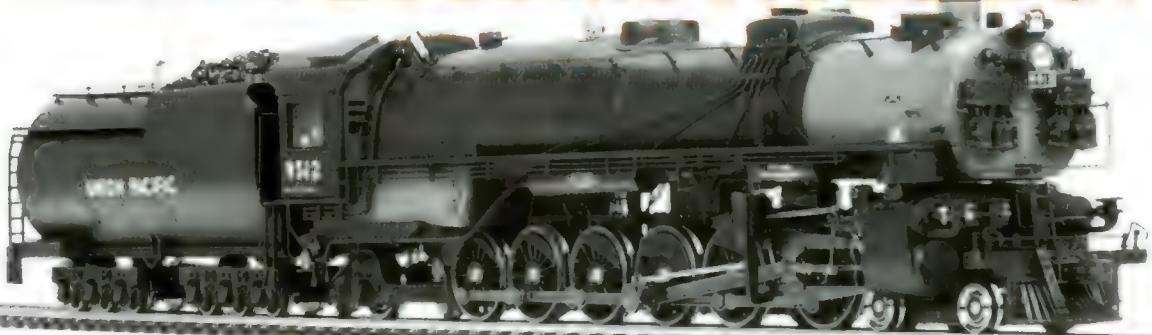
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Adding lights to an existing scene is a project that can be completed in a couple of evenings. **Cody Grivno** shows you how he illuminated the town of Mukwonago on the HO scale Milwaukee, Racine & Troy. **Jim Forbes** photo

Adding lights to a scene

Real railroads operate around the clock, meaning that we can add night operations to our model railroad. One of the ways we can make our "nighttime" operating sessions more realistic is by adding lights to structures, vehicles, and station platforms. This month, I'll show you how I illuminated Mukwonago on our HO scale Milwaukee, Racine & Troy layout.

Regular readers of *Model Railroader* will recognize Mukwonago from previous Step by Step columns. Managing editor David Popp showed how to model a commuter station (May 2007) and an alley scene (August 2007).

Adding lights to an existing scene requires planning up front, so draw a diagram to see how your proposed lighting project will work.

When working on a wiring project, be prepared for surprises. For example, the lights over the Mukwonago station signs shown in **step 3** on page 34 operate at a lower voltage than the rest of the lights and require resistors. After installation, I tested them, and the filaments on these bulbs were barely glowing. After talking with editor Neil Besougloff and executive editor Andy Sperandeo, we determined the supplied resistors for those bulbs weren't right for our application.

Fortunately, Andy knew we had a decade box (available from Mouser) for testing resistors. It turns out the supplied 470 ohm resistor was too strong for our circuit. We needed a $1/8$ watt, 330 ohm resistor instead.

Lighting projects require patience and attention to detail, so work carefully. In the end, you'll be rewarded with a scene that will be a real attention getter. **MR**

More on our Web site

Subscribers can get modeling tips and see the latest new products on "Cody's Office." The weekly program is available only at ModelRailroader.com.

Step 1 Drafting a plan

As with any project, it's good to have a plan of attack before starting. David developed the wiring diagram shown here for our Mukwonago scene.

You'll notice that on the house and bar, which have two lights each, that there is only one set of wires that connect to the bus. That's because I wired the bulbs together inside the structures, giving me fewer feeder wires to deal with under the layout. I wired these lights in parallel.

For more detail on wiring the structures, see **step 3** below and on the next page.

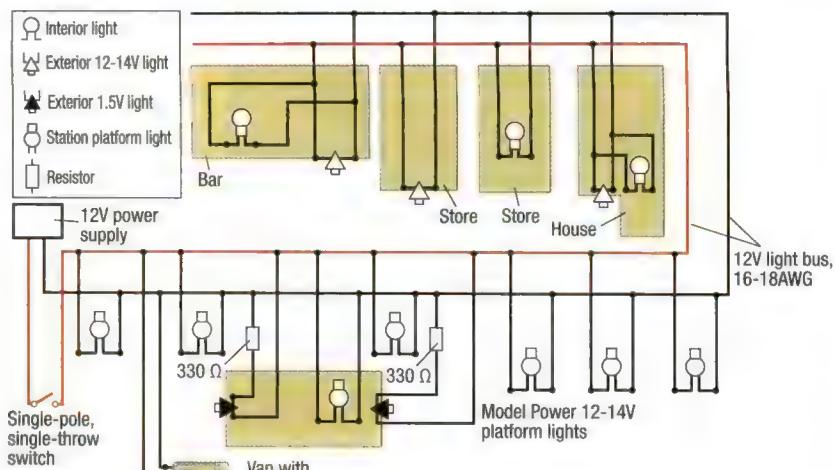


Illustration by Jay Smith

Step 2 Preparing the buildings

I didn't want to illuminate each and every structure window, which would be unrealistic. To prevent light from shining through windows, I masked off select windows with Scotch-Blue painter's tape and then sprayed the interior of each building with Polly Scale Steam Power Black. The dark paint not only prevents light from shining through the windows, it keeps light from glowing through the plastic walls too.



Step 3 Installing the lights



Next, I added lights to the buildings. I used Brawa no. 3415 bulbs for the interior lights. To keep the bulbs (and bases) out of sight, I mounted them above the doors and windows with double-sided foam tape. I ran the wires between the doors and windows so they wouldn't dangle in front of the clear glazing.



I used Walthers and Miniatronics lamps for the exterior lights. Before I installed the Walthers lamps (933-1094), I measured $5\frac{1}{16}$ " above the selected doors. At that height, I marked the center of the door, then drilled an $1/8$ " opening for the wires. I cemented the lamp to the building with cyanoacrylate adhesive (CA).

Step by Step

Step 3 Installing the lights (cont'd)



Since the scene includes a commuter station, there are plenty of vehicles in the lot. I thought it would be neat to have at least one vehicle with its headlights and taillights on. Busch produces a Chrysler minivan that has such features. Like the building lights, the van has two wires that I attached to the lighting bus.

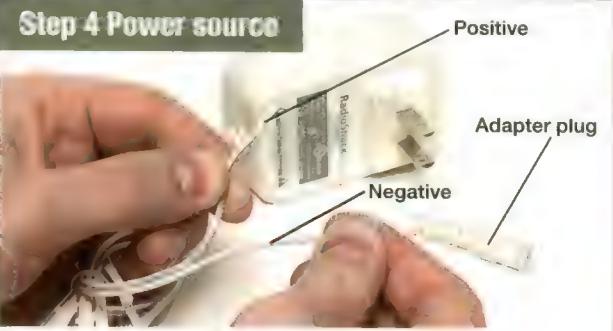


I installed the Miniaturonics lamps (72-315-03) above the station signs on the depot using the same technique (but a smaller drill bit) shown on page 33. These 1.5V lights needed resistors to be used with our 12 volt (V) power supply. I used an $1/8$ W, 330Ω resistor with each lamp, as shown in the diagram in step 1.



The house has an interior and exterior light. To reduce the number of feeder wires I'd need to attach to the bus, I soldered the wires from the Brawa light to those from the Walthers lamp. Both the insulation and the wire on the lamp leads are delicate, so use care when stripping the ends for soldering.

Step 4 Power source



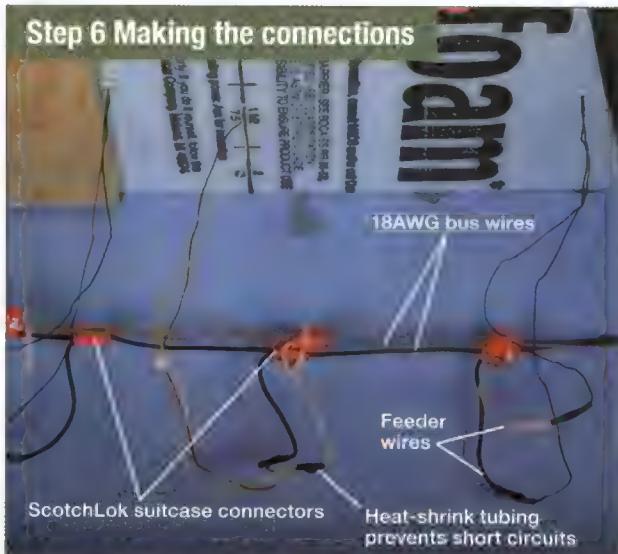
The lights are powered by a 12V, 1.5 amp power supply (RadioShack no. 273-1775). I first removed the adapter plug with a pair of wire cutters. Then I pulled the two wires apart. The strand with the numbers is the negative and is attached to the bus. The strand with the dashed lines is positive and is attached to a single-pole single-throw (SPST) switch.

Step 5 Dropping the wires



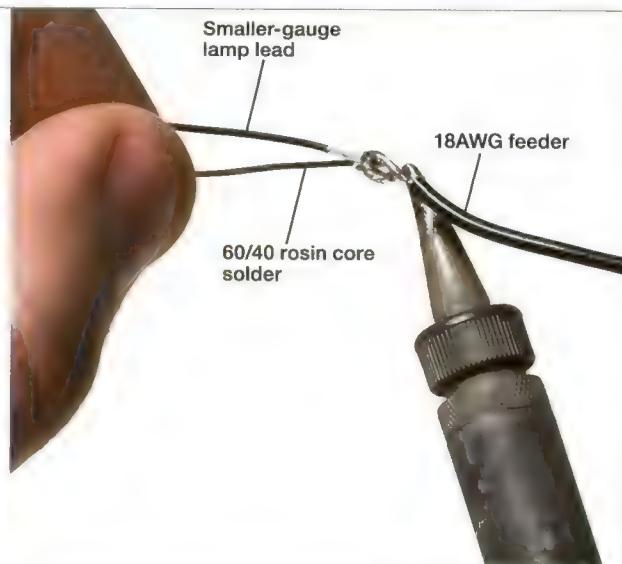
The scenery base at Mukwonago is a mixture of plywood and extruded-foam insulation board. I marked the locations where the wires would pass through the layout and drilled holes at these spots. To make it easier to feed the wires through the foam and plywood, I inserted small coffee straws into the holes and fed the wires through the smooth straws.

Step 6 Making the connections



To reduce the amount of soldering I'd have to do beneath the layout, I used 3M ScotchLok insulation displacement (suitcase) connectors, which are available from Mouser, Micro-Mark, and most hardware and home improvement stores. The connectors are offered for various gauges of wire, so select the ones that are appropriate for your project.

To use the connectors, I placed the 18AWG bus wire into the top connector. Then I slid the feeder into the bottom opening. Once the wires were in place, I used a ScotchLok Crimping Tool (a pair of pliers would also work) to press the metal connecting bar into place. Once that was set, I snapped the plastic cover over the connector.



The wires from the lights are too thin to work with the ScotchLok connectors. I rectified this situation by using 18AWG stranded copper wire to transition from the suitcase connectors to the wires from the lights.

I made a loop at the end of the 18AWG wire and tinned it. Then I ran the stripped end of the thin wire through the opening and wrapped it around the heavier-gauge wire. It's important to form a good mechanical joint before applying the solder. To prevent a cold joint (one not heated long enough to activate the bond between the wires and molten solder), I applied the heat on the larger side of the wire splice, and then touched the solder to the opposite side until it melted and flowed in.

Step 7 Putting it to the test



With all of the wiring complete, it was time to make a final inspection with the overhead lights turned off. Though all of the lights worked, I discovered two light leaks. The leak at the base of the house was easy to fix. I soaked the ground foam with isopropyl alcohol to reactivate the scenery adhesive, and pressed the house back into the foam, as shown above.



However, the leak at the base of the store shown above couldn't be fixed the same way. The garbage cans helped conceal some of the light. To prevent the light from glowing under the door, I had to improvise. I used full-strength Elmer's glue to attach a small dark gray foam block by the door. Much like weatherstripping stops drafts, the foam stops light leaks.



Bulbs, wire, and power: The basics of lighting scenes on your model railroad

Enhance your layout with miniature lighting

By Paul J. Dolkos • Photos by the author

This rayon plant, built by Richard Daniels and shown on Jim Brewer's HO scale Norfolk & Western, has nearly 500 miniature light bulbs. Author Paul Dolkos shares ideas for using scenic lighting on your layout.



We appreciate the glow of a locomotive's headlight and trackside signals, so why not extend that appeal throughout our layouts? Scenic lighting can range from a fully illuminated industrial complex, such as the one shown above, to a single lighted window in a house. Scenic lighting isn't difficult to install. It's just a matter of connecting multiple low-voltage bulbs.

No matter what type of scenic lighting you want to use, you need to plan for it before you start building structures or adding scenery to your layout. In this article I'll cover the basics. [Additional application information can be found in *Step by Step* on page 32 and on the manufacturers' Web sites listed on page 40 – *Ed.*]

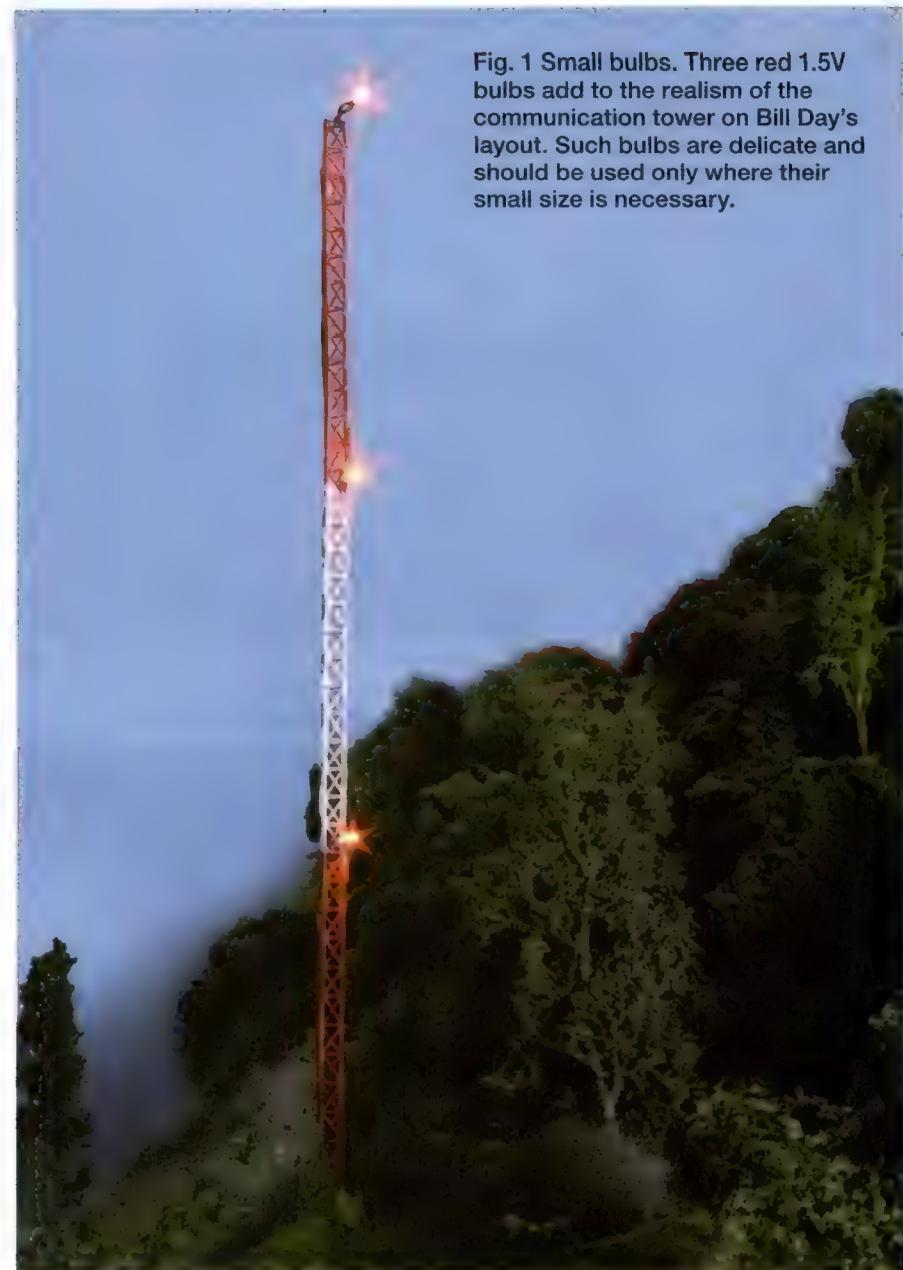


Fig. 1 Small bulbs. Three red 1.5V bulbs add to the realism of the communication tower on Bill Day's layout. Such bulbs are delicate and should be used only where their small size is necessary.

Types of bulbs

There are a variety of miniature bulbs that can be used for scenic lighting. They're typically rated from 1.5 to 14 volts (V). The tiny 1.5V bulbs are delicate and should be reserved for special applications where size is critical, such as a marker light on a chimney or tall antenna mast, as shown in **fig. 1**. Otherwise, use a standard bulb voltage so you're always certain what power is required.

Richard Daniels, who lighted and built the rayon plant shown above left, recommends 12V bulbs. These long-lasting bulbs provide a lot of light and are offered in various colors and sizes.

One common bulb size is "grain-of-wheat," $1/8$ " (about 3mm) in diameter. Another common small size is "grain-



Fig. 2 Types of bulbs. All Electronics' grain-of-wheat bulb (14V, 40mA) and Micro-Mark's grain-of-rice (12V, .030mA) and grain-of-wheat (12V, .082mA) bulbs can all be used for scenic lighting. These bulbs range in price from 40 cents to \$1 each.



Fig. 3 Illuminating select rooms. To suggest the lights are on in some rooms but not others, Richard Daniels built wall partitions from thick styrene sheet. He painted the walls to prevent the light from glowing through the styrene.



Fig. 4 Interior detailing. Since the freight dock and office are illuminated, Bill Day added some basic details to these two rooms. The John Deere simulated neon window sign on the right is from Miniatronics.



Fig. 5 Copper foil tape. Wires from miniature lightbulbs can also be soldered to this self-adhesive tape, designed for stained-glass windows. The wires are easier to conceal if the tape is mounted to the underside of the roof.

of-rice," $\frac{3}{32}$ " (about 2mm) in diameter. There are also 5mm-diameter lamps. See fig. 2 on the previous page for samples of 2mm and 3mm bulbs.

In addition to incandescent bulbs, which lend a pleasing warm color to a model scene, there are miniature fluorescent lamps, fiber-optic strands, and bright light-emitting diodes (LEDs).

Power supplies

One or more power supplies will be required for scenic lights on a layout. Though any power supply with an output that matches the bulb voltage will work, Richard recommends using a regulated supply because it suppresses power line surges. This significantly increases the life of the bulbs.

Power supplies must also be able to handle the current required for the number of bulbs used. Miniature bulbs typically draw from 30 to 80 milliamps (mA). The basic math is that with one amp (1000mA) of current, with loading conservatively at 80 percent of capacity as a safeguard, ten 80mA lamps can be powered. So for an urban scene with numerous lights, a 3-amp or larger supply is recommended. Separate power supplies are ideal if you have several illuminated scenes.

Power supplies are available from electronic suppliers listed on page 40, including All Electronics, Mouser, Parts Express, and RadioShack, as well as some of the model lighting manufacturers. If you operate sound-equipped locomotives, be aware that some of the high-current power supplies have cooling fans that emit noise that may compete with your engines.

Model railroad power packs can also be used as a direct current (DC) power source, but many aren't regulated. Since the voltage level varies when using the speed control, it's possible to accidentally increase the voltage beyond the bulb rating. Small alternating current (AC) power adapters usually have limited current output. Though many of these aren't regulated either, they can be used to power a handful of bulbs.

In one instance I connected the bulbs in a station to my Digital Command Control (DCC) power bus because it was readily available and the building was the only lighted structure on the layout. However, having several bulbs connected to the power bus isn't recommended, as they could impose a significant current draw on the system and make it difficult to operate trains.

Since you probably won't have your scenic lighting on all of the time, it's advisable to install easily accessible

on-off switches under the front edge of the layout. This not only helps extend bulb life, it makes troubleshooting easier.

Installing interior lighting

If you want to install lights in a building, there are a number of questions to consider. Do you want lights to show in all windows or should some remain dark? With illumination, will you be able to see inside, making interior detailing necessary? Are the walls opaque enough to prevent the building from glowing? How will you reach the bulbs if you need to replace them? Do you want to remove the building from the layout for routine maintenance or display? The answers to these questions will influence how you build the structure.

Typically not all rooms in a building are illuminated at one time. For example, a residence may have some first floor lights and few upstairs lights on early in the evening. To create this effect in a model structure, interior walls or baffles have to be installed to partition the light, as shown in **fig. 3** on the opposite page.

Without interior lighting, it's difficult to see inside a structure. When you add lights, the building's interior is visible and details need to be added, as shown in **fig. 4**.

If the structure walls are made of plastic or any material that isn't opaque, paint the inside walls black and then the desired wall color. It's wise to make the roof or floor of the building removable so the bulbs can be easily replaced if one burns out.

Making structures easily accessible is also handy if you want to install a terminal block or small plug on the wires running into the structure. However, make sure the seams are tight, otherwise there will be light leaks.

Lighting structures, especially commercial and industrial enterprises, requires many bulbs. Running a pair of wires to each bulb can create a potential rat's nest of wiring that may be visible through the windows. An alternative is to use self-adhesive copper foil tape, shown in **fig. 5**, which is used in the construction of stained-glass windows and by dollhouse hobbyists. The $1/4"$ -wide tape can be split in half when fewer than five bulbs are in the circuit. The tape can be run throughout the structure, as shown in **figs. 3** and **6**, and the wires can be soldered to the tape. It can also be painted to match interior walls.

When installing lights, wire them in parallel. Assuming adequate current,



Fig. 6 Crossing paths. Blue masking tape insulates the crossing of two strips of copper foil tape. The primary electrical feeds, bulb leads, and junctions between two pieces of copper foil are connected with solder.



Fig. 7 Quick lamp shades. When precise detail isn't required, you can make exterior lamps by cementing a No. 2 washer on a grain-of-rice bulb. Paul applied layers of thick cyanoacrylate adhesive to give the shade its basic shape.

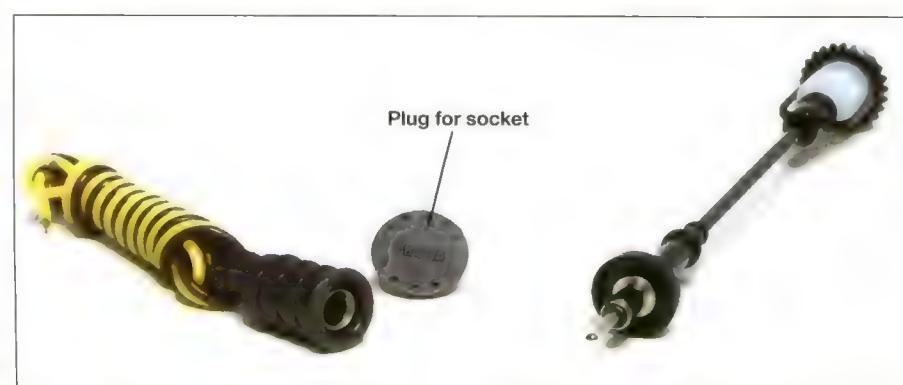


Fig. 8 Street lights. Brawa makes an assortment of street lights that plug into flush-mounted pin sockets. Since the sockets are spring loaded, if the pole is bumped, it's not likely to break. Jim Forbes photo

Lighting suppliers

[We have attempted to provide a complete listing but may have missed some suppliers. We welcome any additions. – Ed.]

All Electronics

149 Oxnard St.
Van Nuys, CA 91411
www.allelectronics.com
Products: Bulbs, light-emitting diodes (LEDs), and power supplies

Brawa

P.O. Box 1274
Uferstrasse 26-28
73625 Remshalden,
Germany
www.brawa.de/en
Products: Street lights and lighting accessories

Busch

Heidelberger Strasse 26
D-68519 Viernheim,
Germany
www.busch-model.com/english.htm
Products: Animated lighting and vehicle lights

Circuitron

211 RocBaar Dr.
Romeoville, IL 60446
www.circuitron.com
Products: Bulbs, LEDs, and special lighting circuits

Delphi Creativity Group

3380 E. Jolly Rd.
Lansing, MI 48910
www.delphiglass.com
Product: Copper foil tape

Evan Designs

P.O. Box 2044
Broomfield, CO 80038
www.modeltrainsoftware.com
Products: LEDs and special-effect lighting kits

Gebr. Faller GmbH

Kreuzstrasse 9
78148 Güttenbach, Germany
www.faller.de
Products: Bulbs, LEDs, and power supplies

GRS Micro Liting

32 Wedlock Dr. SE
Rochester, MN 55904
www.grsmicroliting.com
Products: Floresta bulbs, vehicle lighting kits, strobes, and flashers

Micro-Mark

340 Snyder Ave.
Berkeley Heights, NJ 07922
www.micromark.com
Product: Bulbs

Miniatronics

561-K Acorn St.
Deer Park, NY 11729
www.miniatronics.com
Products: Bulbs, street lights, neon signs, and power supplies

Mouser Electronics

1000 N. Main St.
Mansfield, TX 76083
www.mouser.com
Products: Bulbs, power supplies, and electronic components

Model Power

180 Smith St.
Farmingdale, NY 11735
www.modelpower.com
Products: Assorted bulbs

Ngineering

20024 N.E. Bridled Rd.
Battle Ground, WA 98604
www.ngineering.com
Products: Miniature LEDs, lighting accessories, and power supplies

Parts Express

www.parts-express.com
Products: LEDs, power supplies, and small bulbs

Ram Track

229 E. Rollins Rd.
Round Lake Beach, IL 60073
www.ramrcandramtrack.com
Products: LEDs and lighting kits

Scale Shops

713 Vista Way
Prescott, AZ 86303
scaleshops.com
Products: LEDs and wiring supplies

Walthers

P.O. Box 3039
Milwaukee, WI 53201
www.walthers.com
Products: Working traffic lights and street lamps

lamps wired in parallel will not dim as you add more bulbs. It's also easy to extend a parallel circuit through a building, especially with copper foil tape. If a foil path crosses over the opposing lead, place a piece of non-conducting tape between the two strips of foil to prevent a short circuit, as shown in **fig. 6** on the previous page.

Exterior lighting

Yard lights and lights over doorways and under canopies add to the overall scenic lighting effect because they illuminate a wider area. Doorway or porch lights can be a bulb with the wires stuck through the structure wall. You can either paint the top of the bulb to simulate a fixture or add a stamped metal shade such as the ones available from Campbell Scale Models (brass) and Nginnering (aluminum). Alternatively, you can put a no. 2 washer over a bulb and build up a shade using thick cyanoacrylate adhesive (CA), as shown in **fig. 7**.

Bare bulbs can be shielded on canopies with the canopy roof. For large-area illumination, a variety of lights on posts and poles are available in virtually any style desired. Brawa offers street lights that plug into flush-mounted pin sockets, shown in **fig. 8**, which makes installation easy. The sockets are spring loaded, so if the poles are bumped, they're less likely to break.

Each light also includes a small plug that looks like a manhole cover. This makes it easier to conceal the socket should you need to remove the light for maintenance, layout photography, or any other reason.

Light up the night

In addition to the scenic lighting techniques covered here, you can add illuminated signs, working traffic lights, and vehicle headlights and taillights. Special-effect circuits that simulate a flickering fire and the flash of a welding torch are also available. These circuits can enhance a campfire scene or the inside of a mechanic shop, respectively.

Though some advance planning is required, scenic lighting can enhance the realism of a model railroad. The ultimate payoff is the drama of watching trains operate through the soft glow of the lights. **MR**

Paul Dolkos of Alexandria, Va., is a frequent writer and photographer for Model Railroader magazine. He'd like to thank Richard Daniels for sharing his experiences with scenic lighting and Jim Brewer and Bill Day for opening up their home layouts for photography.



Forney no. 8 spots a newly painted and weathered flatcar at the Forster Toothpick Mill in Strong, Maine, on Lou Sassi's On2½ layout. Lou used a simple technique to make the plastic flatcar deck look like weather-beaten wood.

Weather a flatcar in one evening

A quick project to make your models realistic

By Lou Sassi • Photos by the author

I have some Bachmann wood-deck flatcars that I use on my On2½ Sandy River & Rangeley Lakes RR. These models are well-detailed and include molded-in planks and wood grain on the deck. However, the deck is the same Tuscan Red color as the flatcar's body, which doesn't quite cap-

ture the gray, weather-beaten look of a prototype wood deck. I improved the look of the plastic flatcar deck by applying some quick and easy weathering techniques.

After having my good friend George Micklus paint and letter the flatcars for the SR&RL, I went to work making the



Fig. 1 Shades of gray. Lou began the project by brush-painting a base coat of Polly Scale Reefer Gray on the flatcar's deck. He then painted random boards with Polly Scale D&H Gray and New Gravel Gray.



Fig. 2 Weathering with pastels. After the paint had dried, Lou weathered the deck with shades of black, gray, and brown powered artist's pastels. To fix the pastels you can apply a mist of Testor's Dullcote to the deck.

plastic decks look more like wood. Using acrylic paints and powdered artist's pastels, I finished the project in an evening.

I began by brush-painting the deck of each car with Polly Scale Reefer Gray. As soon as the base coat had dried to the touch I used a no. 0 brush to paint individual boards at random. First I used Polly Scale D&H Gray and then New Gravel Gray, as shown in **fig. 1**.

Weathering with pastels

After the paint had dried, I used a stiff oil-painting brush to apply black and gray shades of Weber-Costello Hi-Fi Gray pastels, followed by two or three of the darker brown earth tones of Weber-Costello pastels as shown in **fig. 2**. These pastels come in sticks, so I scraped a hobby knife along each stick to form a powder that I could apply with a brush.

If you want, you can secure the pastels to the deck with a light application of Testor's Dullcote. However, it will take longer to weather the deck because you'll have to reapply dry colors each time the Dullcote is applied. Dullcote has a tendency to visually dissipate the powders. On this project, I didn't bother with the Dullcote application since I don't handle my equipment enough to warrant that step.

Figure 3 shows the dramatic results of the finished, detailed flatcar compared to the out-of-the box model. And that's it, a quick, easy, one-evening project that improves the look of your model flatcar fleet. **MR**

Lou Sassi is a longtime contributing photographer and author for Model Railroader and Great Model Railroads, and he has authored several books. Lou's latest book is How to Build and Detail Model Railroad Scenes – Vol. 2. To order a copy, visit ModelRailroader.com or call 1-800-533-6644.



Fig. 3 A big difference. The finished flatcar on the right looks a lot more realistic than the freshly painted model on the left. In addition to flatcar decks, this technique works well on simulated wood structures too.



Rebuild a GP7 the Santa Fe way

Turn a Proto 2000 locomotive into a model of an eye-catching prototype

By Craig Chandler • Photos by the author

At first glance, the locomotive has an odd look to it. Its cab looks too large, jutting up above the long hood. The angles on the sides of the cab roof are all wrong. It's also my favorite locomotive. No matter what paint scheme it wears, you can't hide the Santa Fe heritage of a rebuilt GP7u.

The Atchison, Topeka & Santa Fe Ry. rebuilt 298 Electro-Motive Division GP7s and GP9s between 1972 and 1981, according to *The Contemporary Diesel Spotter's Guide* (Kalmbach Publishing Co., now out of print). Locomotives with and without dynamic brakes were rebuilt, along with former passenger GP7s with rooftop air tanks.

During the rebuilding project, the Geeps had their short hoods lowered. Those rebuilt after 1974 also received a new Topeka cab designed by the Santa Fe shops. Similar to the Santa Fe's CF7 cab, it resembles the normal, angled EMD

cab, though taller and with a wider roof. The combination of the sharply sloped roof and narrow number board gives this locomotive its distinctive look.

The cab roof is cluttered with an air horn and air conditioning unit, along with an antenna platform supported by small legs to raise it above the air conditioner. During the 1970s and '80s, the units also had yellow rotating beacons opposite the air horn.

The locomotives were rebuilt with 567BC engines that had four exhaust stacks. The extra stacks, installed between the two original stacks, were taller than the originals. An engine compartment air vent was installed between the exhaust stacks and the front radiator fans.

The Santa Fe shops removed the dynamic brakes from the units that had them. The dynamic brake fan was removed and plated over, and two exhaust stacks were piped



Burlington Northern Santa Fe no. 1300 and Salina & Medicine Valley no. 7001, both Santa Fe-rebuilt GP7u diesels, idle in the yard on Craig Chandler's HO scale layout. Craig shows how to kitbash these units from Proto 2000 Electro-Motive Division GP7s.

through the plate. The dynamic brake enclosure remained, but the air intake screens were covered.

Other visible changes include a modified side sill. The Santa Fe either cut several large slots in the sill to aid inspections or removed the sills entirely. They also removed the outside brake hangers from the trucks.

These units, painted in the yellow-and-blue freight warbonnet scheme, worked the Santa Fe's yards and branches from the 1970s into the '90s.

The remaining fleet of Santa Fe GP7u locomotives went through the shops again in the mid-'90s. This time, the headlights were relocated from the number board to the low hood, and the air horns were moved from the cab roof back onto the long hood. The two original (outer) exhaust stacks, half as tall as those added in the first rebuild, were extended to match the middle pair's height.

Following the merger between the Burlington Northern and the Santa Fe, the GP7u's were restenciled with Burlington Northern Santa Fe reporting marks and given new numbers. Several have been repainted in the orange-and-green Heritage I paint scheme.

Of the original 298 rebuilt engines, 64 – or about 20 percent – were still on the BNSF roster in 2007. Not bad for 50-year-old locomotives.

Modeling the GP7u

The details on many of the units have changed considerably in the 30-plus years since the first Geep went to the shops. Therefore, it's important to refer to photos of the specific locomotive you wish to model. Also, be sure those photos show your locomotive in the era you plan to model.



Fig. 1 Raising the roof. Craig adds an .020" x .060" styrene strip to the top of the Cannon & Co. GP35 cab wall to make the roof taller. He then trims it to match the roof's slope.



Fig. 2 Giving it wings. Craig adds .020" styrene "wings" to the angled sides of the cab front, since the new cab is wider at the top than the GP35 cab.



Fig. 3 Clipping the wings. Craig uses a metal straightedge to guide his hobby knife as he trims the top of the styrene extensions even with the top of the strip added in fig. 1.



Fig. 4 A new angle. The roof should be 8 scale feet wide, so Craig trims the wings at an angle to meet this width. He has also filled in the number board opening and door vent.



Fig. 5 Cab assembly. After cutting styrene for the roof pieces, Craig assembled the cab and added details. For the number box, use one from an Athearn CF7 cab.

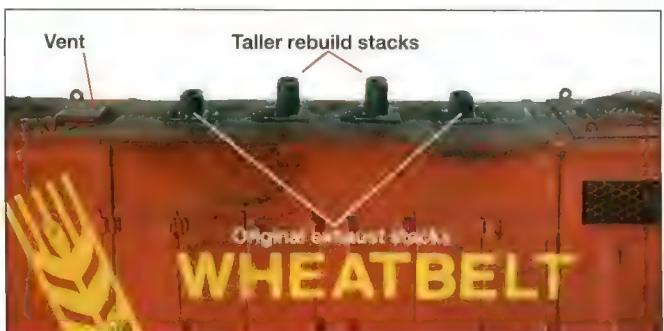


Fig. 6 Vent and stack detail. This picture of shows the positioning of the GP7u's taller exhaust stacks. After the second rebuild, all four stacks were made taller. Also visible in this photo is the engine vent. Craig made it by layering two rectangles of .015" styrene.

I made my first GP7u from an Athearn GP7, and the next two from Proto 2000 by Walthers locomotives. I used an undecorated phase III GP7 without dynamic brakes for my model of Santa Fe GP7u 1300, and a phase I for Watco GP7u 7001. I will describe here the conversion of BNSF 1300. (The Watco conversion was similar; for information on that locomotive, see "Not modeling the Santa Fe?" on page 47.)

The Santa Fe unit represents the engine as I saw it in 1999. It was first rebuilt in June 1981, and had recently been through the shop again. See the photo at right.

Getting started

I started by removing the locomotive's cab, since it would receive an entirely new one. Because I was modeling a post-'90s GP7u, I used a chisel-bladed hobby knife to carve the stacks off the long hood; I would later add four taller stacks. For an original GP7u, I would keep the short stacks as they are and add two tall ones in between.

Next, I cut down the short hood. I made a horizontal cut 3 scale feet above the top of the battery boxes, then cemented on a new top made from .040" styrene. When the glue was cured, I used a sanding stick to slightly round the top edge and blend it into the sides. The height of the short hood from battery box to the top of the hood is 3'-4", so the thickness of the new top plate brought the short hood up to just about the right height.

Extending the cab

The revised cab roof contour of the GP7u is what makes this engine so visibly a Santa Fe rebuild. I started with a Cannon & Co. GP35 cab. The front window placement isn't exact for the Santa Fe cabs, but I could live with it because the detail is great and the cab sides are perfect.

I started by adding styrene extensions to the front and back walls of the Cannon cab to reshape its profile. The extra height is apparent in head-on photos of the prototype. I started by gluing a strip of .020" x .060" styrene on top of the cab, as seen in **fig. 1** on page 43.

I trimmed the ends of the strip to match the existing angle of the cab roof, then added .020" styrene wings to the front and rear walls, gluing them flush against the angled edges. See **fig. 2** on page 43. When the glue was completely cured, I trimmed these pieces straight across the top of the front and rear walls, using a sharp hobby knife with a straight-edge as a guide. See **fig. 3**.

The rooftop is 8 feet wide, so I measured out four scale feet from the center post of the front cab wall. I then trimmed the wing from that point to the point where the wing met the top of the sidewall, as shown in **fig. 4**.

The new cab's number box is narrower, so I also needed to fill in the opening for the number box on the cab front. The back cab wall needed a small .020" filler strip.

Next I assembled the front, back and side cab walls. I glued the cab to the shell for strength and to keep everything square. I cut a 8'-0" x 6'-9" piece of .020" styrene for the cab roof and cemented it atop the front and back walls. When it was dry, I cut narrower pieces of .020" styrene for the angled sides of the cab roof. I filled any gaps and the vent below the engineer's front window with modeling putty and sanded the joints smooth.

The Rail Power number board I used is hard to find now that Athearn has purchased Rail Power. You could buy a CF7 cab from Athearn, part 31011, and salvage its number box. If you are modeling a 1974-1990s rebuild, add a Detail Associates LT1024 headlight to the cab.

The Geep cab was now beginning to show some character. My assembled cab is shown in **fig. 5**.



Craig photographed BNSF 1300 in Davenport, Iowa, in 1999. The locomotive was renumbered following the Santa Fe-Burlington Northern merger, and had also recently returned from another trip to the shops.

► Parts List

A-Line	159 Air conditioner
29200 windshield wipers	190 Air horn "Leslie"
Athearn	201 Sand filler hatch
31011 CF7 cab with angled roof	Proto 2000 by Walthers
Cannon & Co.	40483 GP7 locomotive, undecorated
1502 GP-35 cab	Microscale
Detail Associates	87-29 Santa Fe freight warbonnet
1019 Classification lights	87-1035 BNSF restenciled diesels
1024 Dual Pyle headlight with shield	Testors
1301 Cab sunshade	1708 Insignia Yellow
1401 Drop steps	1768 Flat white
1501 EMD m.u. stand	1772 Blue Angels Blue
1803 Sinclair antenna	Miscellaneous
2206 Eye bolts	.020" x .060" styrene strip
2212 Coupler lift bars	.020" sheet styrene
2402 Exhaust stack, EMD non-turbo	.010", .015", and .020" brass wire
Details West	
132 Hand brake	

Long hood details

On the prototype, there's an engine vent on the long hood, between the second fan and the batten strip closest to the cab. It is off-center, toward the engineer's side of the hood. I made it from two pieces of .015" styrene, a scale 1'-3" x 2'-9" rectangle on top of a second piece, 1 x 2 scale feet. I then cemented it in place on the long hood. This vent is visible between the lift rings on the left side of **fig. 6**.

As can also be seen in that photo, the four exhaust stacks on the GP7u were originally two different heights. The center stacks are 6 scale inches higher. If you are modeling an original GP7u, the two taller stacks are evenly spaced between the original two. If you are modeling a later locomotive, shave off the two shorter ones with a chisel-bladed hobby knife and cement four new tall stacks in place.

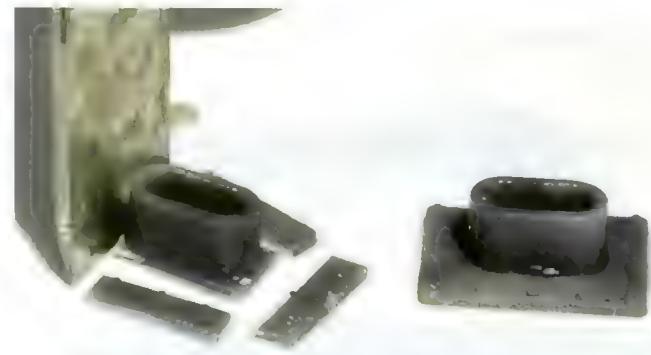


Fig. 7 Doubling up. Craig trims the base off a Detail Associates non-turbo diesel exhaust stack. Craig glued two together to make a single tall stack.



Fig. 8 Stack 'em up. After cementing the trimmed stack on top of the unmodified part, Craig will fill and sand the joint. Early GP7u's had two tall stacks; later models had four.

I made my tall stacks from Detail Associates 2402 EMD non-turbo stacks. First, using a sharp new chisel blade, I trimmed off the base plate flush with the sides of the stack, as shown in **Fig. 7**. I then glued the trimmed stack on top of a new one, as seen in **Fig. 8**, making a stack twice the height.

At the rear of the long hood, I added the top grab iron and a sand filler hatch. I also added lift rings to the fan plates,



Fig. 9 Detail positioning. This photo of Burlington Northern Santa Fe 1300 shows the locations of body shell details.



Fig. 10 Lose the shoes. The Santa Fe removed the GP7u's outer pair of brake hangers. Craig also added brass air and sand lines to his Geep's truck sideframes.

as well as two more flanking the engine room vent. I chiseled the rear number boards off the end of the long hood, filling the gaps with modeling putty and sanding them for a smooth rear wall. I then added the hand brake and drilled holes for the grab irons, but I waited to install them until after I had painted and decaled the engine.

I drilled holes for the four grab irons at the front of the short hood, as well as for the grab iron atop it. I also added the front sand-filler hatch at this point. For an early Geep, add classification lights; leave them off if you are modeling an engine after the Santa Fe removed them in the '90s.

BNSF 1300 details

I added a Pyle headlight to the front of the short hood. I notched out a scale 1 x 2-foot space on the front, then built up styrene behind the notch to support the headlight. Atop the cab I added an air conditioner.

I also added a scale 3 x 3-foot antenna platform with legs of scale 2 x 3 styrene. Because the platform straddles the long hood and the cab, the front legs are 6 inches tall and the back legs are 15 inches. Since the platform is fragile, I didn't install the Sinclair blade antenna on the platform until after painting and decaling the engine.

I installed a Leslie air horn in front of the rear radiator fans on the brakeman's side of the long hood. I threaded a length of .015" brass wire through a couple of eye bolts from the top of the cab to the air horn to represent the air line.

The prototype has a pipe that runs between the front windows from the low hood up to the number boards. I used a no. 78 bit to drill up through the low hood and into the number box, then glued in place a short piece of .020" brass wire to model the pipe. I added a second air line between the vertical engineer's window and the front window, using .010" wire.

I made a smaller antenna platform from styrene rod and sheet styrene to support the end-of-train antenna atop the number box. I made the antenna itself by cutting down a second Sinclair blade antenna. The positions of these details can be seen in **fig. 9**.

Like so many other Geeps, no. 1300 has slotted side sills. I found it easier to remove and replace the side sills than to modify the ones on the body. Before cutting them off, I slipped a piece of paper behind the sills and traced their shape. This gave me a pattern for the new ones.

I started by cutting the holes in the sills first, then cutting out the sills themselves. This is a lot easier than trying to cut holes in the thin, fragile parts. I taped my steel straightedge down to a sheet of .040" styrene and used the edge to be sure I was drilling the holes in line. I drilled $\frac{3}{32}$ " holes, then used a hobby knife to connect them. The long slot is a scale 5'-6" long and the other two are 2'-0" each. When this was done, I put my sill pattern over the styrene and cut out the new sills. I attached the new sills to the body shell, and after the cement dried, I drilled the hole for the fuel filler.

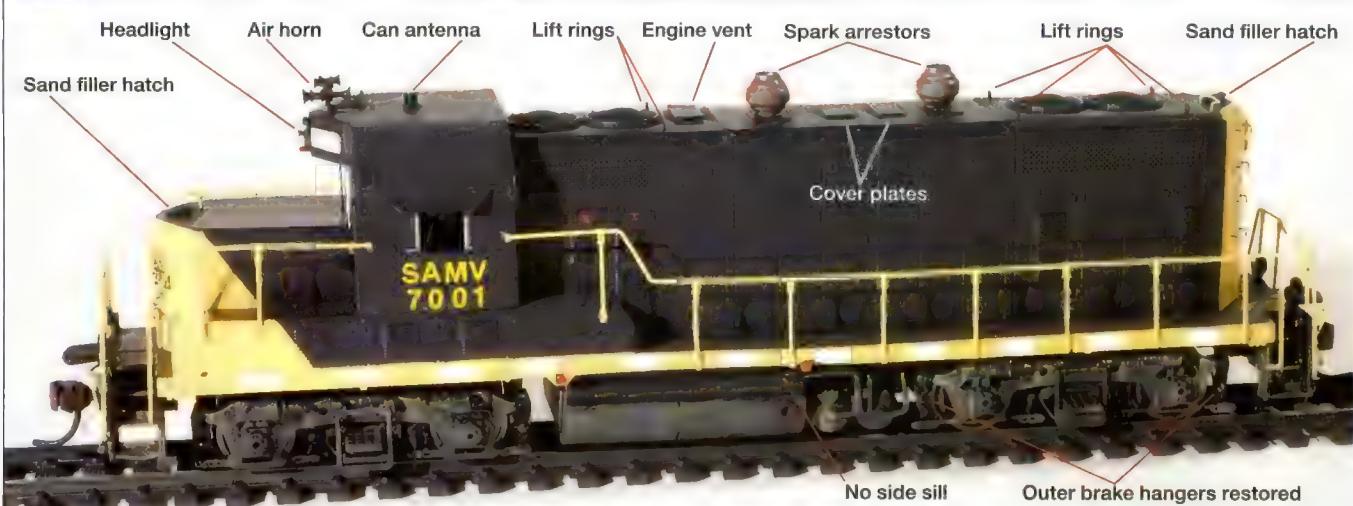
To complete the underbody, I removed the truck sideframes and cut off the outside brake hangers on all eight wheels, as shown in **fig. 10**. The Santa Fe removed these in the initial rebuilding. You can add air and sand lines at this point if you wish.

I primed the body with a coat of flat white enamel spray paint. After the paint dried, I filled and smoothed any remaining imperfections.

Painting BNSF 1300

Engine 1300 wore the Santa Fe's blue-and-yellow freight warbonnet scheme. I chose Testors Blue Angels Blue and

Not modeling the Santa Fe?



Though it's lettered for Craig's freelanced Salina & Medicine Valley RR, this GP7u is based on a prototype sold by BNSF and rebuilt by its new owner, Watco. Many rebuilt Geeps found their way to new owners.

Beginning in the '90s, the Santa Fe began to sell off branch lines, and many of the rebuilt Geeps went to the new owners. I wanted to model one of these units.

Watco (WAMX) unit no. 7001 left the Santa Fe system before the second round of work in the '90s. But when I photographed it in Wichita, Kan., in 2005, it was back to its original two exhaust stacks, each with a spark arrestor.

The cab is very clean compared to the Santa Fe units. The top of the cab has only a Nathan M5 air horn and a can antenna. Instead of a nose light, I cemented a headlight to the front of the number board. See the photo above for the placement of these and other details.

I added flat plates of .010" styrene to the two spots on the long hood where the middle two exhaust stacks were plated over. I then used a chisel blade to take off the

outside two stacks, replacing them with spark arrestors. The 7001 also had its side sills removed, so I did the same to my model.

I painted the engine with a 2-to-1 mix of white and yellow. I then masked off the nose, the rear of the long hood and the sills, and sprayed it with Testors flat black lightened with a bit of white to show off the details better.

I lettered the engine for my fictional railroad, the Salina & Medicine Valley, using Woodland Scenics MG730 and 724 Railroad Gothic dry transfer letters and numbers. The white reflective frame stripes are from the Microscale MC-4390 set.

I painted the grab irons and handrails the same yellow as the nose and sills, and the spark arrestors got a rusty brown color. – C.C.

Insignia Yellow. I sprayed the yellow first, then when it was dry, I masked off the warbonnet. I drew the shapes onto drafting tape, cut them out, and applied them to the long hood. The sides of the short hood, the end of the long hood, the side sills, and the cab remain yellow, so I masked them before spraying the blue paint. For the top of the short hood, you might find it easier to spray-paint a decal sheet blue, and cut it to fit after painting the rest of the locomotive.

Once the paint had dried, I protected the model with a spray of Testors Glosscote to ready it for decaling. I lettered BNSF 1300 with Microscale set 87-29 for the Santa Fe warbonnet scheme and set 87-1035 for the BNSF restenciling.

I applied the warbonnet decals first. When the Santa Fe and Burlington Northern merged, locomotives for both railroads received BNSF reporting marks, and the new cab-side numbers were put over a large yellow patch on Santa Fe units and a green patch on BN units. The 1300 had a pretty fresh paint job when I photographed it in 1999, so I applied the cab numbers without using the yellow patch. Later, after weathering the unit, I added yellow frame stripes to match photos of current BNSF locomotives.

I used Solvastet to snuggle down the decals, then set the model aside to dry. Afterward, I gently washed off any residue, and when the shell had dried a second time, sprayed it with Testors Dulcote.

Final details

The Santa Fe painted its grab irons blue. I painted them separately from the model and installed them after the decals were in place.

I next added the railings, coupler lift bars, air hoses, and m.u. stands. The handrails are yellow, but the m.u. stands are blue. I also painted a yellow safety stripe on the edges of the steps, following the prototype.

Next, I finished the cab. I applied the window frames and glass, then added the cab sunshades, windshield wipers, antenna platforms, and antennas.

Ditch lights and m.u. hoses were the last small details to be added. I installed the ditch lights after the handrails. I then used a small brush to paint the fuel caps, emergency cutoffs, and m.u. stand covers red.

After getting a light weathering and a set of Kadee couplers, BNSF engine no. 1300 was ready to go to work on my layout. **MR**

Craig Chandler grew up in Kansas, where he first got interested in the Atchison, Topeka & Santa Fe. He has been modeling for 27 years. His HO scale Salina & Medicine Valley RR is a freelanced road set in Kansas. Craig lives in Gretna, Neb., and works for the University of Nebraska-Lincoln. He and his wife, Carole, have three children, Bethany, Adam, and Alex.



Motors 604 and 603 pull cars off the ferry *Ramon* at Mallard, Calif., on the south shore of Suisun Bay. Reginald McGovern photo

Sacramento by train... and by ferry

Plan for an 11 x 19-foot switching layout features street running and ferry operations

By John Williams

The Sacramento Northern Ry. (SN) was conceived by predecessor company Oakland, Antioch, & Eastern as an interurban route between the San Francisco Bay area and Sacramento. Although the SN abandoned passenger service in 1941, electric freight service continued until 1957.

From the 40th and Shafter Yard in Oakland, westbound freights continued over Key System tracks to the Oakland Terminal Ry., which served the important Oakland Army Base. This was the only access to the base for the Western Pacific, SN's parent company, until a new connection came in 1957.

► The track plan at a glance

Name: Oakland, Antioch, & Eastern Ry.

Scale: HO (1:87.1)

Room size: 10'-6" x 19'-0"

Prototype: Sacramento Northern Ry.

Locale: San Francisco Bay area, California

Era: Late 1940s to early 1960s

Style: shelf with central peninsula

Mainline run: 108 feet

Minimum radius: 18"

Maximum grade: 4 percent

Minimum turnout: no. 4

Having researched the Sacramento Northern Ry.'s South End route (<http://people.virginia.edu/~ggg9y/home.html>), stretching from Oakland to Sacramento, Calif., I was easily convinced that its interurban origins, short trains, steep grades, tight curves, and minimal facilities would make it ideal for developing into an HO scale layout.

Though many signature elements found along the south end route can be re-created on a layout, I avoided the complexities of overhead wiring by designing my plan for diesel operation.

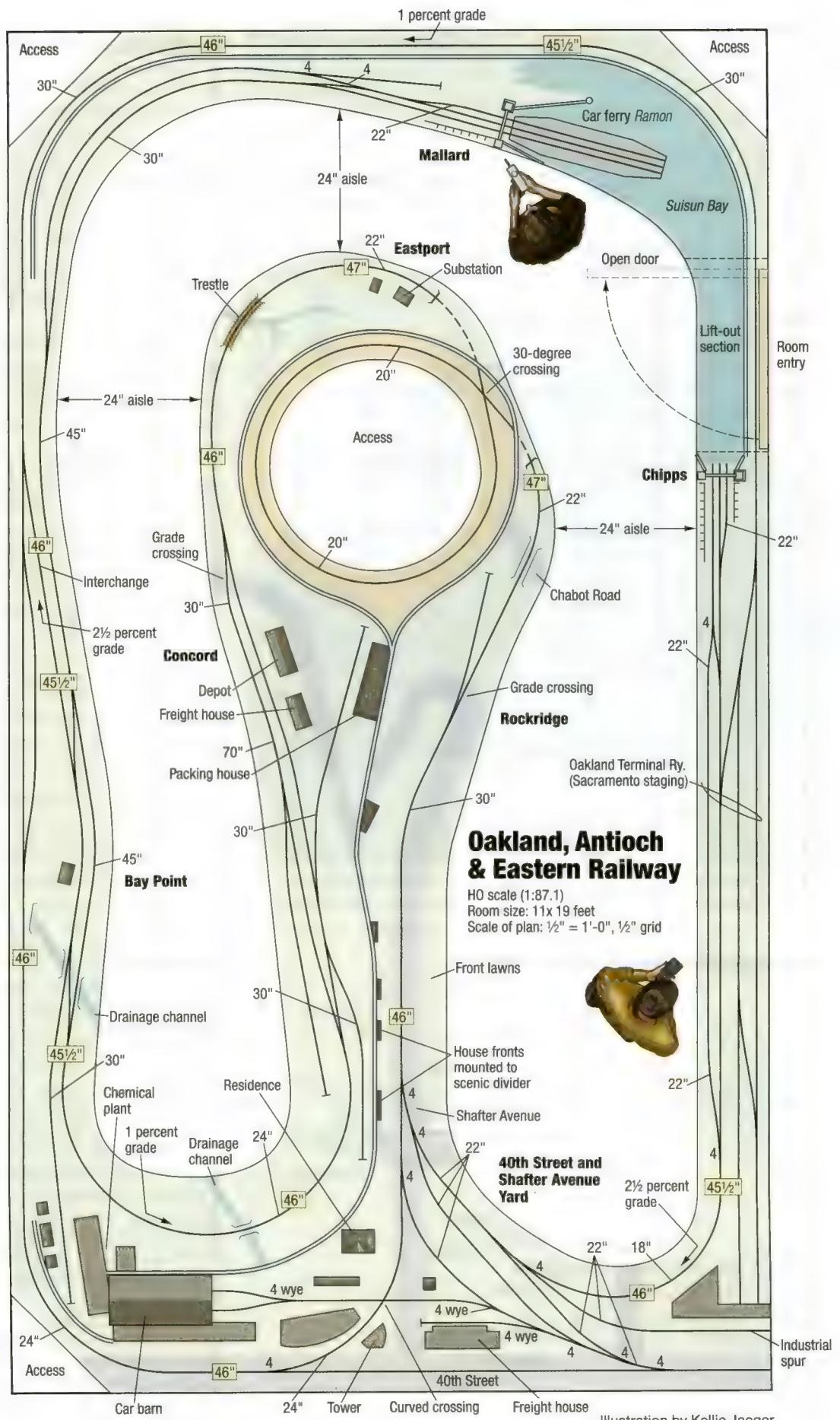


Illustration by Kellie Jaeger



The *Ramon* included three tracks, but the narrow separation permitted only the simultaneous use of the outer tracks or the one in the middle. William D. Middleton photo

A trip around the track plan

A typical eastbound freight to Sacramento departs from the staging area on track representing the Oakland Terminal Ry. The track curves left behind a scenic divider and encounters a 1 percent grade. When the line reappears along the opposite wall, it's running adjacent to the mainline between Bay Point and Mallard. Here the track is masquerading as either a Atchison, Topeka & Santa Fe or Southern Pacific line and incorporates the upper part of an interchange connection.

Beyond the interchange, the line disappears behind a scenic divider and curves left onto 40th Street in Oakland. At the west end of the wye at 40th Street and Shafter Avenue, the route swings north onto Shafter.

Most trains work at the 40th and Shafter Yard, typically pulling an SN boxcar in less-than-carload-lot (LCL) service from the freight depot track to the head end or switching out cars from the industrial spur. All freights between here and the next stop at Concord require a helper. The short spur at Rockridge is used by the helper on westbound trains, allowing it to cut off, back in, and return to the yard.

Continuing from the Rockridge turnout, the line reaches the end of its 4 percent grade, crossing a fill, Chabot Road and entering a tunnel, where it makes a 360 degree turn. This may look like a helix, however, the track remains level at 47" and crosses itself at grade. This lengthens the mainline run within the tunnel and helps conceal a train so it isn't simultaneously visible at both tunnel portals.

At Eastport the line emerges into Pinehurst Canyon, passing the electrical substation on the left. Descending a 2 percent grade, the line reaches the depot at Concord, where helpers cut off. The structure isn't closely based on the prototype, but is a generic representation of SN depots in this area, with a packing house spur and team track to service local agriculture.

Leaving Concord, the line descends a 1 percent grade on a fill to reach Bay Point. This location represents the shore of Suisun Bay, where SN serves local industries and interchanges cars with the ATSF and SP. An industrial spur serves a chemical plant, and the interchange track is connected by a steep link to the main line above.

From Bay Point it's a short distance across marshes to a trestle at the water's edge and the slip at Mallard. The route continues over water aboard the ferry *Ramon* to the slip at Chipps. The locomotive, after splitting its train and

Oakland, Antioch, and Eastern Ry.

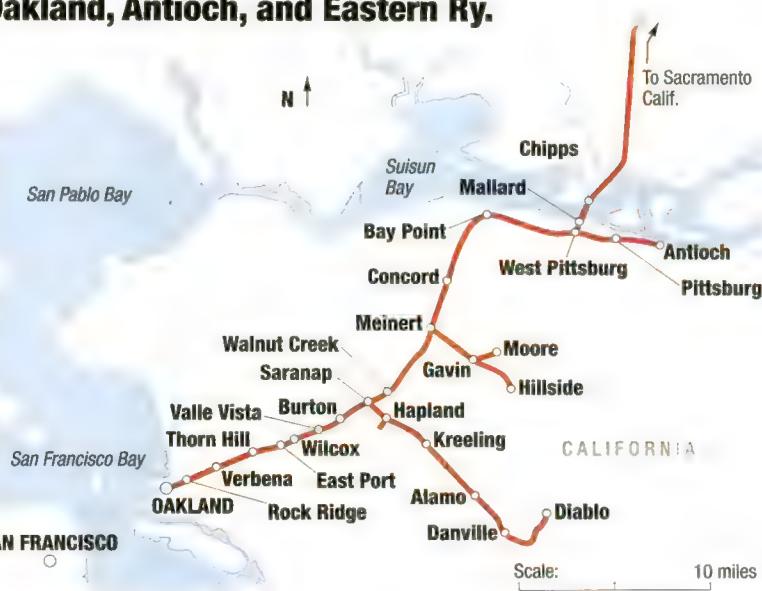
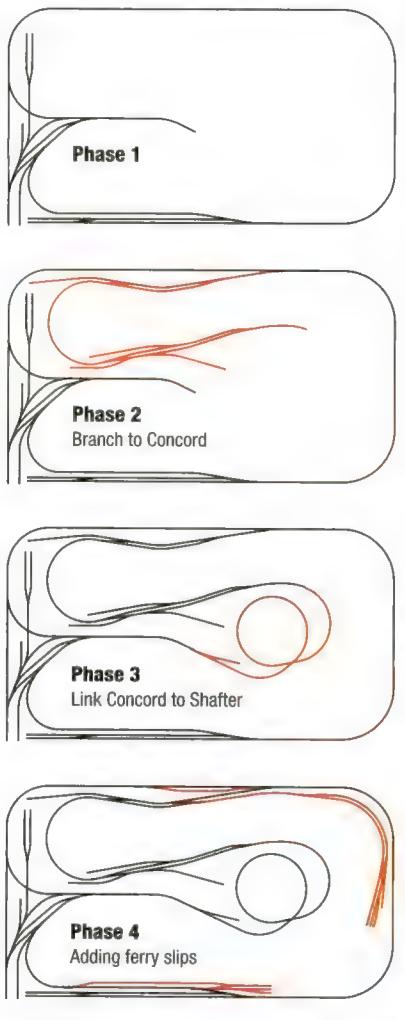


Figure 1 Construction phases



shoving the sections onto the car ferry, crosses with its consist. Upon arrival, the locomotive pulls the cars off the *Ramon* and into the Oakland Terminal Ry. staging area.

Car ferry operations

The three track arrangement on the deck of the prototype car ferry *Ramon* was dictated by the necessity to run scheduled passenger service with varying numbers of cars. A short local consisting of two cars could occupy the center track of the ferry, while a six-car express train had to be split and placed on the two outer tracks.

I've designed my shortened model of the ferry *Ramon* to be 25" long, which is enough to accommodate eight cars. This is less than the 56" maximum train length, so extra crossings are needed to move the longest trains. The tracks on the model ferry and apron have a separation of 1 1/4" so the approach track layouts can be constructed with commercial turnouts and curves of 22" radius.



The ferry watchman's dog sits on the approach to the Mallard slip. This area would be modeled in the final phase of constructing the HO layout. Richard Steinheimer photo

Construction considerations

One of the most beneficial aspects of this design is the provision for building the layout in four distinct phases. As illustrated above, the layout can be developed to allow operation as soon as the initial phase is completed.

In addition to a phased development of the layout, potential builders will also want to consider other construction aspects of this plan. The minimum aisle width of 24" and the scenic divider on the peninsula could make operation with any more than two people somewhat cramped. If you don't find ferry operations appealing, you could easily build a bridge between the two ports.

If the California locale or the interurban nature of the plan do not appeal to you, think about situating the layout in other parts of North America, where interurban lines interchanged freight with larger, busier Class 1 railroads. For that matter, you could even adapt

the setting of the layout to a coastal island or location along a major lake or waterway to make the most of the car ferry operation. **MR**



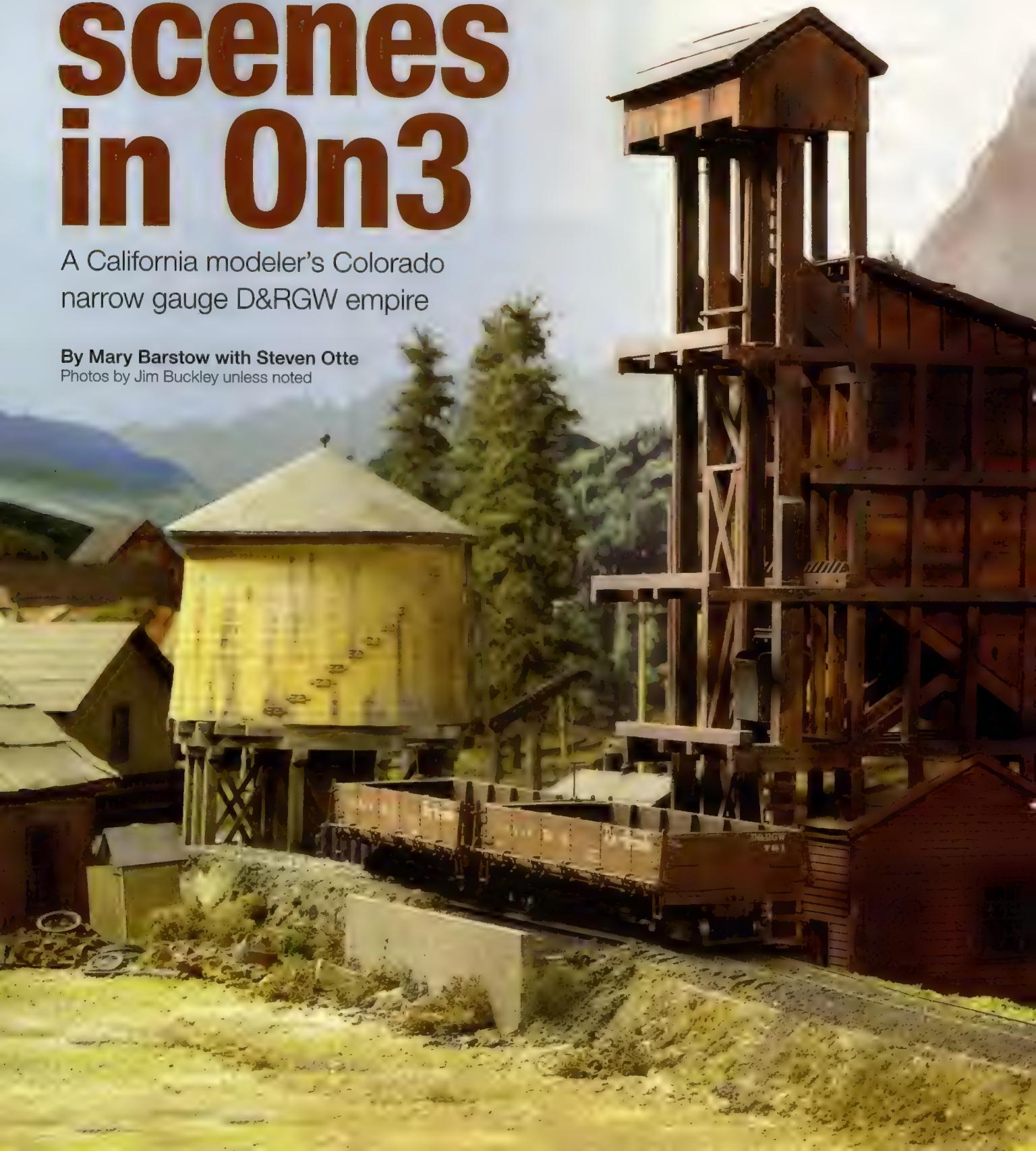
► **Meet John Williams**

John Williams is an electronics repair technician who lives in South Ruislip, Middlesex, United Kingdom.

Spectacular scenes in On3

A California modeler's Colorado narrow gauge D&RGW empire

By Mary Barstow with Steven Otte
Photos by Jim Buckley unless noted





1. Denver & Rio Grande Western locomotive no. 461, a narrow gauge 2-8-2 Mudhen, gets its tender filled at the Durango coaling station on Jerry Merker's Colorado layout. Jerry's On3 model railroad is filled with stunning scenes like this.



2. Lake City is at the end of a D&RGW branch line. The mountain backdrops were hand-painted by Jerry's friend Ray Spencer, a fellow narrow gauge modeler.

► The layout at a glance

Name: Denver & Rio Grande Western and Rio Grande Southern
Scale: On3 (1:48 proportion, three-foot gauge)
Size: 34 x 60 feet
Prototype: D&RGW and RGS
Locale: Southern Colo. and northern New Mexico
Era: First half of 1900s
Style: Walk in with duckunders
Mainline run: 300 feet
Minimum radius: 72"
Minimum turnout: no. 6
Benchwork: slotted steel angle open frame
Height: 27" to 62"
Roadbed: Homasote on plywood
Track: Precision Scale code 100 flextrack
Scenery: hardshell over cardboard web
Backdrop: painted on 1/8" Masonite
Control: Cab control with radio throttles

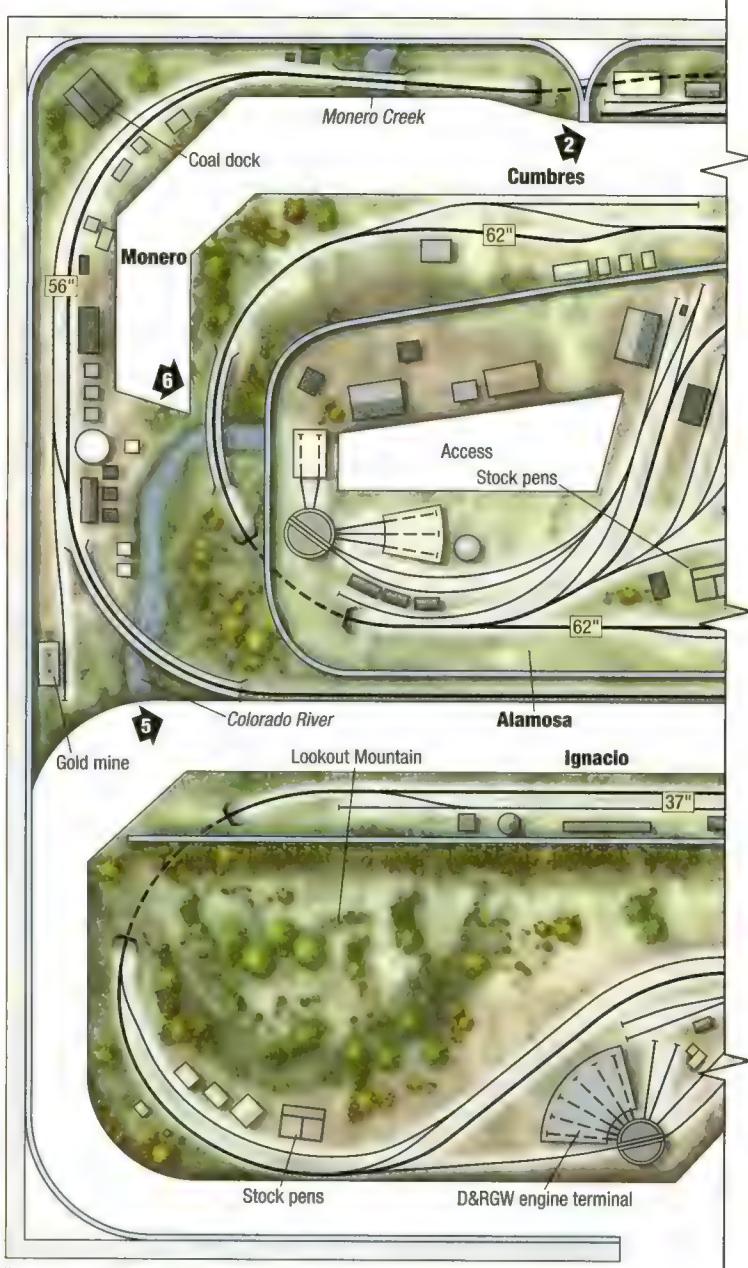


Illustration by Theo Cobb

When the Merkers' home was built 48 years ago, Jerry Merker's priority was that the basement would be big enough to hold the model railroad he envisioned. He quipped that the necessity of building a house above the basement was just a "minor annoyance."

Jerry's quest was to model a major portion of the Denver & Rio Grande Western and the Rio Grande Southern as they were in the first part of the last century, when Colorado was the center of excitement in the American West.

Jerry says that when he was a child in Switzerland, he loved to watch Westerns. So when he moved to the United States and started collecting O scale locomotives, Colorado's narrow gauge steam engines were the natural choice.

The store-bought locomotives came first, then Jerry started to scratchbuild his own. He started building the layout so he'd have a place to run them. By the time he was done, he had a 34 x 60-foot slim gauge empire.

A point-to-point track plan

Jerry's expansive layout uses every available space to create many surprising and spectacular vistas.

Durango is the first scene a visitor comes to after arriving at the bottom of the stairs. Both the Denver & Rio Grande Western and the Rio Grande Southern had engine terminals in this charming Western town, and Jerry has modeled them both.

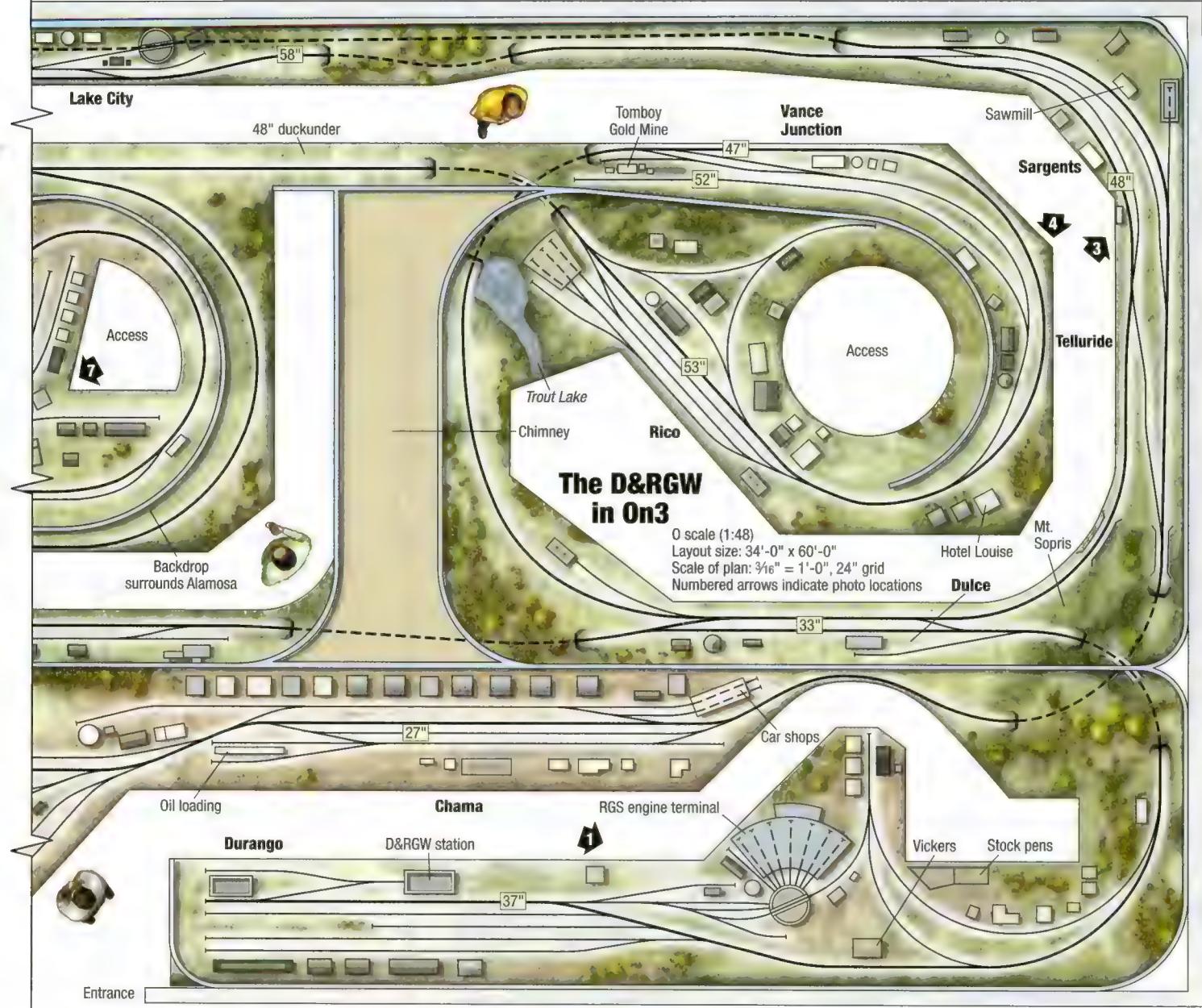
On the other side of the walkway is Chama, complete with its well-known

coal tower and roundhouse. The layout continues at both ends of town, with track passing through the backdrop on its way to other well-known Colorado railroad towns including Rico, Telluride, and Alamosa.

Jerry said he didn't follow any particular example or influence in designing his track plan. His only goal was to avoid the bowl-of-spaghetti effect of stacking too much track in too little space. Long before it became trendy, Jerry designed a single-track, point-to-point layout with high backdrops.

► More on our Web site

For more pictures of Jerry Merker's spectacular Colorado layout, as well as downloadable computer wallpaper, go to www.modelrailroader.com



A visitor to Jerry's layout is treated to many breathtaking scenes, including Alamosa, one of the layout's two terminals. The town is surrounded by backdrops and is reachable only by ducking under to one of its operating pits.

Another spectacular sight is a pair of dramatic trestles spanning the Colorado River at Monero. One trestle was built by Si Simington, a friend and fellow O scaler. Jerry built the other out of Plexiglas, a material he used for many other structures on the layout.

Jerry, who used to make a living as a Plexiglas salesman and fabricator, cut the material into $1/4$ " square strips to build the trestle. Among other structures he made from Plexiglas are the turntables and the Chama roundhouse. Jerry says he likes Plexiglas because it's

strong, easy to glue with acrylic solvent cement, and doesn't warp or change size as humidity changes.

Mountains' majesty

Ray Spencer, a friend Jerry met at a Narrow Gauge Guild meeting, painted the murals of the Colorado Rockies that serve as a stunning backdrop for the layout. The beautiful peaks, ominous clouds, and lush hills covered with aspen groves are breathtaking.

The realism of the backdrop is continued in the railroad's scenery. Jerry started with benchwork made of structural steel angle [see "Slotted steel benchwork" on page 56. — *Ed.*], then added wood risers and roadbed made of plywood and Homasote. To this, he added basic landforms woven of card-

board web, topped with paper soaked in plaster.

Structures include true-to-prototype stations, engine terminals, and lumber yards. Most are built from kits — some wood, some cast Hydrocal — but a few are scratchbuilt. The Union, Palace, and Rico Grande hotels in Rico provide Old West atmosphere. The Hotel Louise bordello in Telluride, built from a long discontinued Thomas A. Yorke kit, has a ramshackle appearance. The Tomboy Gold Mine near Vance Junction seems ready to disgorge untold wealth.

Rolling on the Rio Grande

Though he had the benefit of using Precision Scale flextrack when building his layout, Jerry had to handlay his turnouts and crossings.

3. A logger stops to gas up his truck before delivering logs to the sawmill at Sargent's. Vintage vehicles and details like the gas pump and signs help establish the layout's time period in the early 1900s.



Slotted steel benchwork

Jerry's benchwork is a little out of the ordinary, being made of slotted steel angles. Jerry owned a sign company that used the angles in the warehouse for shelving. He found the strips easy to cut and join together with screws. "No problems. It worked out real nice," he said. Jerry points out that the parts aren't just easy to assemble and change around, but also strong enough to take refuge under in an earthquake – not that he's ever had to do so. Jerry tops the framework with $\frac{3}{4}$ " plywood, $\frac{1}{2}$ " Homasote, and Tru-Scale milled wood roadbed. – M.B. Photo by Mary Barstow

Jerry's line is served by 40 locomotives, some of which are scratchbuilt. He also has close to 200 freight and passenger cars, many of which he built from Lobaugh and San Juan Car Co. kits. Jerry weathers his cars with Floquil paints. Nothing on his layout is as it came from the factory, Jerry says; everything is kitbashed, detailed, weathered, or all three.

The layout is wired for block control using direct current, but since he usually operates solo, Jerry didn't want to be tethered to a control panel switching blocks. He controls his locomotives with radio throttles from Remote Control Systems, an Australian company.

Jerry says he has no plans to switch to Digital Command Control. "I'm 84 years old. I'm not going to do anything new any more," he says.

Most of the turnouts on the layout – the ones that can be reached from the aisle – are operated with Caboose Hobbies HO scale ground throws, which Jerry says have enough travel to work fine on On3. Inaccessible turnouts are controlled with solenoid switch machines. Jerry says he doesn't remember the brand, only that they were made in England at least 30 years ago. They still work fine, he says.

When it comes to operations, Jerry prefers passenger trains. His particular



4. A young woman chats with a potential customer outside the Hotel Louise in Telluride. The local house of ill repute looks like it has seen better days.



5. Mikado no. 487, sporting a snow plow, approaches a trestle over the Colorado River near Monero. Jerry's friend Si Simington built the trestle.

6. Mudhen no. 455, at the head of a local freight, rolls onto the trestle over the Colorado River between Alamosa and Cumbres. Jerry scratchbuilt the bridge out of Plexiglas strips.



7. Two locomotives await servicing at Alamosa, the highest point on the layout. The town is isolated from the rest of the layout by an encircling backdrop.

favorite is the *San Juan Express*, which Jerry calls "one of the most well-known narrow gauge trains in the world." The train runs the length of the layout from Alamosa to Durango. A typical consist is a Railway Post Office car, baggage car, two coaches, and an observation car. Following the prototype's example, Jerry varies the motive power depending on the time of year. He also mixes

things up by running an occasional through freight.

Jerry says his favorite part of the hobby is scratchbuilding locomotives. He also enjoys attending O scale conventions and hunting for unique accessories for the railroad.

Now that he is retired and the construction of the layout is finished, Jerry runs his layout every day. Colorado's



► Meet Jerry Merker

Jerry Merker started model railroading with a Märklin O gauge set when he was a child living in Switzerland. After his family sent him to the United States, he moved to the Los Angeles area, where he joined an O scale club and started collecting Lobaugh and Max Gray locomotives. He is a retired Plexiglas salesman and fabricator. He lives in San Mateo, Calif.

slim gauge roads may be history, but they live on in Jerry's basement. **MR**

Mary Barstow is superintendent of the Los Angeles Division, Pacific Southwest Region of the National Model Railroad Association. She lives in Rancho Palos Verdes, Calif., and divides her time between an 11 x 14-foot HO layout, a garden railway, and her grandchildren.

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Build a train elevator

A compact, automatic device that transfers trains between layout levels

By Steve Harris • Photos by the author

When I built my HOn3 Rio Grande Southern layout a few years ago, I included a helix to connect the upper and lower decks. The helix worked fine, but it was difficult to clean the rails, and my slow-moving HOn3 locomotives took up to seven minutes to negotiate the seven loops of track within the helix. Plus, my track plan (published in the November 2004 *Model Railroader*) had the helix right in the middle of the mainline run.

A visit to my friend Dick Roberts' HO scale layout provided the inspiration for my train elevator. Dick had built a reliable train elevator using a modified garage door opener with a system of pulleys and drawer guides to move the platform. [See *Model Railroad Planning 2001*. – Ed.] For my version, I borrowed some of Dick's ideas and enlisted the expertise and considerable mechanical skills of another friend, Joe D'Elia, the proprietor of A-Line and Proto Power West.

The challenges

We faced a number of challenges. The mechanism had to move the platform slowly and smoothly to avoid derailing the lightweight HOn3 equipment. It had to be fully automatic and reliable, since dropping a brass locomotive would be a disaster (as I later found out during the "debugging" stage).

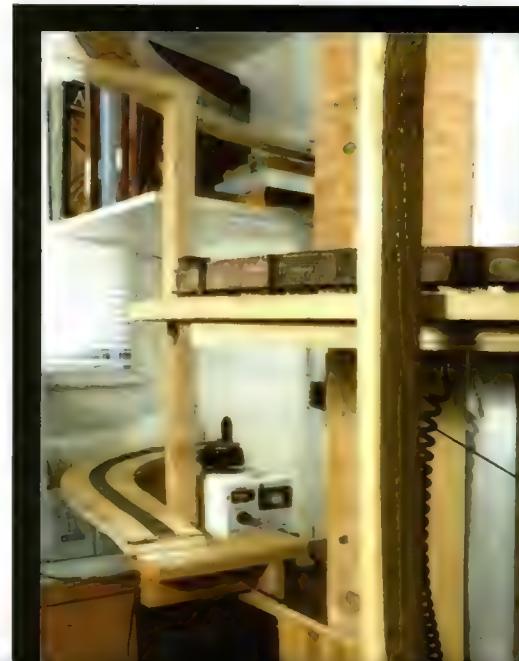
In addition, the entire elevator had to fit within the upper deck's 24" radius reversing loop that I had added around the outside top of the original helix. This meant the elevator platform had to be curved, and could be only about 35" long. Narrow gauge steam locomotives have limited pulling power, and short trains are normal on my layout, so this wasn't a problem.

The garage door opener

A modified screw-driven garage door mechanism operates my elevator (see **fig. 1**), and it has many useful features. It includes an AC motor with a reversing circuit, a threaded drive screw with a moveable carriage, and a shaft to guide the screw. In addition, it has adjustable stops built in at the top and bottom of its travel. The mechanism's only disadvantage is that it runs too fast for a train elevator.

At this point, my friend Dave Balser suggested that we use a variable AC transformer called a Variac, shown in **figs. 2** and **3** on page 62, to slow the motor. However, we found that the door

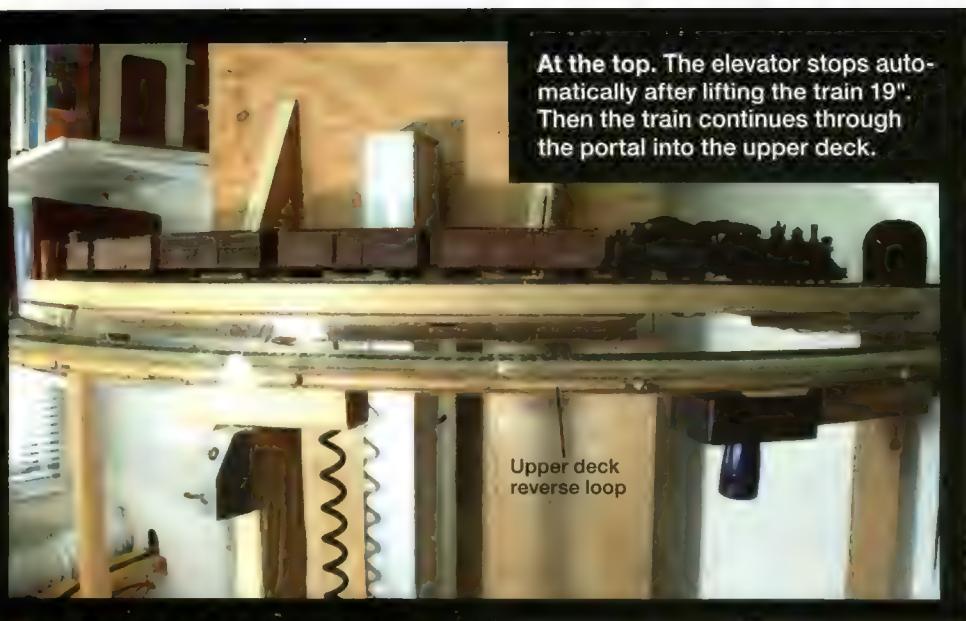
Train elevator. Author Steve Harris added this train elevator to move HOn3 trains between the levels of his double-deck layout in less time than they formerly took to traverse a helix.



Entering the platform. A short narrow gauge train pulls onto the elevator and triggers the lifting mechanism as it stops.



Traveling board
Elevator platform



During the lift an electrical interlock cuts power to the platform track to prevent any inadvertent movement of the locomotive.



opener's electronic circuits for both the motor control and the stop detection were combined on one circuit board. When we used the Variac to lower the input voltage, the detection circuit wouldn't work.

Fortunately, another friend, Phil Hermsmeyer, is an electronics engineer. Phil figured out how to separate these two circuits so we could use the Variac to power the motor with reduced voltage while leaving the full 120 volts available for the detection circuit.

Testing the concept

Joe and I built a prototype mechanism on my workbench using plywood, a pair of high quality drawer guides, the garage door opener, and the Variac. For the purposes of the prototype, we

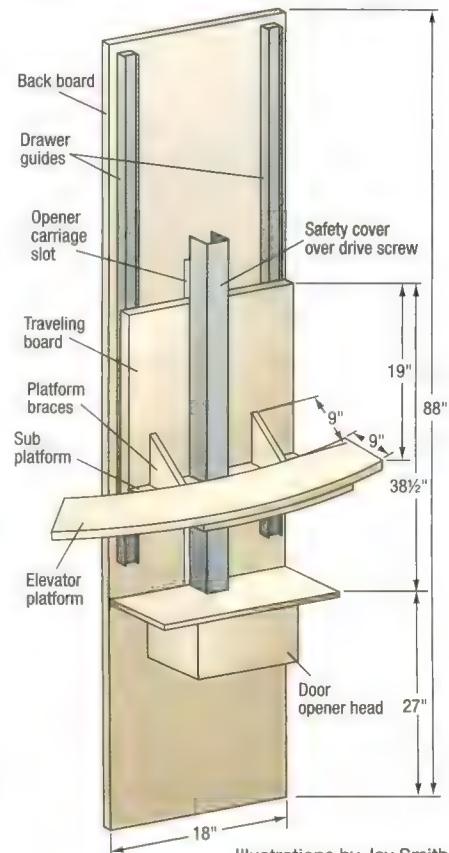
placed as seen in **fig. 2** because it supports some of the finished scenery in other parts of my railroad. The elevator was also tucked inside the upper deck reverse loop.

Automatic operation

Once we had the elevator installed and working mechanically, I tackled the design and installation of its automatic controls. I wanted a train approaching from either the top or bottom to stop and call the elevator. See **fig. 3**. This initiates the sequence of events shown in the three photos in the middle of these pages. After the elevator arrived, the train would proceed onto the platform (lower photo), and stop again while the elevator moved up or down (middle photo). Once the elevator stops (top photo), the train moves off the platform and passes through the portal into the layout to resume its run. All of this was to happen automatically without operator assistance. I achieved this goal using limit switches, optical sensors, relays, and timer circuits.

The initial problem was to make the locomotive stop at appropriate times and places. This was resolved by isolating sections of track to make control blocks in the main line. These isolated sections were installed in both the top

Fig. 1 Train elevator construction



Illustrations by Jay Smith

mounted a vertical stationary backboard on the workbench. We then mounted the door opener head that contains the motor and electronics on a horizontal board secured at a right angle to the backboard.

The horizontal elevator platform that would transport the trains was fastened at a right angle to a second smaller vertical board. This assembly was then attached to the drawer guides mounted on the stationary backboard, as shown in **fig. 1**.

We used a hacksaw to cut the drive screw and shaft to size, then assembled all the parts. The elevator platform was fastened to the traveling carriage on the screw drive with L brackets. Finally, we added a counterweight and pulley system to smooth the motion and allow slower speeds.

We found that the adjustable stops in the opener head allowed us to adjust the elevator so that it would stop at both ends where we wanted it. The Variac allowed us to start the motor and run the mechanism with as little as 50 volts. At that voltage, the mechanism drove the screw slowly and smoothly enough that our elevator could safely transport an HO_N3 train.

The Variac proved to be a good choice. During initial operation, the elevator sometimes moves too slowly and doesn't always complete its vertical movement all the way to the top. I can increase the voltage as necessary, and then turn it back down as the mechanism warms up.

After proving that we could build a workable elevator on the workbench, we proceeded to tear out the front half of the helix and build an elevator in its place. I left the back half of the helix in

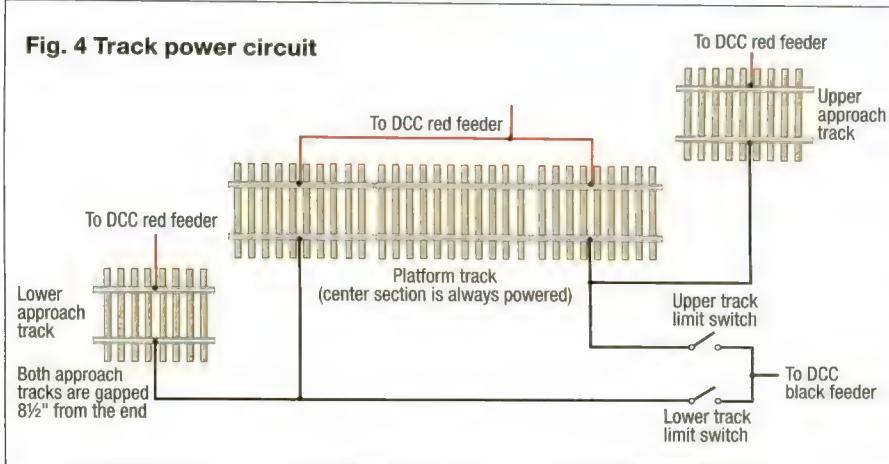


Fig. 2 Tight space. The elevator replaced the original helix inside of the upper deck's reverse loop (top). The remains of the helix help support some scenery.



Fig. 3 Calling the elevator. The platform is up as a train slowly approaches the lower control block and stops over the sensor that calls the elevator.

Fig. 4 Track power circuit



and bottom approaches and on both ends of the elevator platform.

The track power wiring diagram in **fig. 4** shows how I use these sections, which are controlled by limit switches at the top and bottom of the platform travel. Thus, the lower approach block and the left platform block are energized by the closing of the lower limit switch when the elevator reaches its bottom limit. The upper approach block and the right platform block are controlled by the upper limit switch.

If the elevator is in the down position and a locomotive runs into the lower approach track, the lower limit switch will be closed, powering the lower approach block and the left platform block, but not the right platform block. This allows the locomotive to move slowly onto the platform until it reaches the unpowered right platform block. If the platform is in the up position when a locomotive enters the lower approach block, the locomotive will stop in the unpowered block until the elevator arrives and closes the limit switch.

Safety interlocks

A momentary push-button switch normally activates the door opener, but I used Circuitron optical sensors (which activate a circuit when they're shaded from light) to initiate my elevator's movement. The sensors trigger a Circuitron detection circuit with a relay that starts the elevator cycle.

I placed these sensors in positions where locomotives would stop in the

control blocks on each approach track, and a few inches from each end of the elevator platform. Because different locomotives stop in slightly different places, it took several tries to find the optimum position for these sensors.

I also installed separate safety sensors at the ends of the elevator and wired them through relays that prevent movement if any sensor is covered. These sensors protect any train that's stopped across the gap at either end of the platform.

To prevent false triggering, I added limit switches wired in series with the sensor relays. See **fig. 5**. When the elevator is up, only the upper approach and left platform sensors can activate the elevator motor. Conversely, when it's down, only the lower approach and right platform sensors will trigger the control system.

I use a tapered dowel pin that slips into a hole to align each end of elevator as it reaches the end of its travel as seen in **figs. 6** and **7**. I also soldered all of the rail ends to brass tabs, which are cemented to the roadbed. This way the rails can't move out of alignment. See **fig. 8** on page 64.

We installed a simple counterweight system to help smooth the platform's motion. A short cord runs from a hole in the top center of the traveling backboard, up and over a couple of pulleys, and down behind the backboard to a quart plastic bottle filled with weight. My counterweight is a bit lighter than the elevator so the empty platform will move with little effort.

The elevator is located in my shop, which is well lit with multiple windows and fluorescent lights. To my dismay, I discovered that people walking near the elevator created moving shadows that occasionally activated the elevator, even if a train was moving on or off the platform! This derailed one of my brass locomotives, which fell to the floor. To prevent any future problems, I mounted a pair of bright lamps directly above the platform that override the ambient room lighting. See **fig. 10** on page 64.

Timer circuit

To further protect my trains, I installed a timer circuit, triggered by sensors at the ends of each approach track and by a pair of limit switches that close when the platform reaches either end of its travel. See **figs. 4** and **9**. The timer is activated by the limit switch after the elevator platform arrives or when a locomotive crosses onto the platform, covering the sensor. This timer then opens the elevator sensor circuit for 16 seconds, giving the trains

Fig. 5 Interlocking wiring

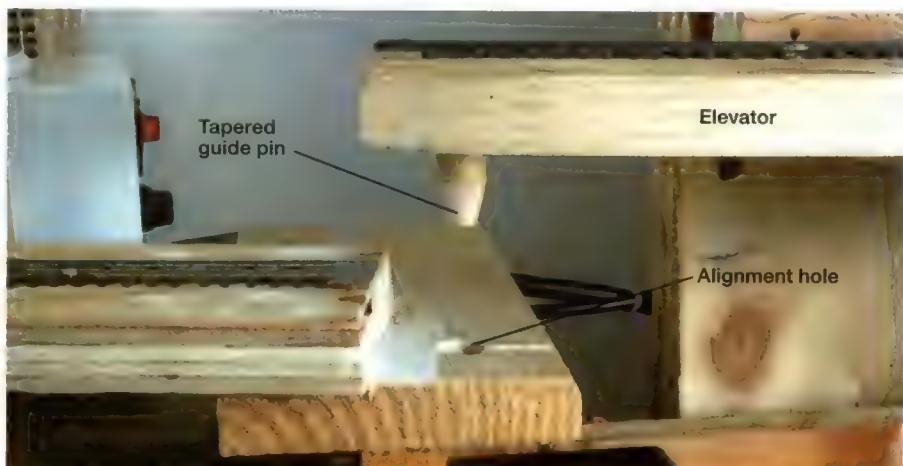
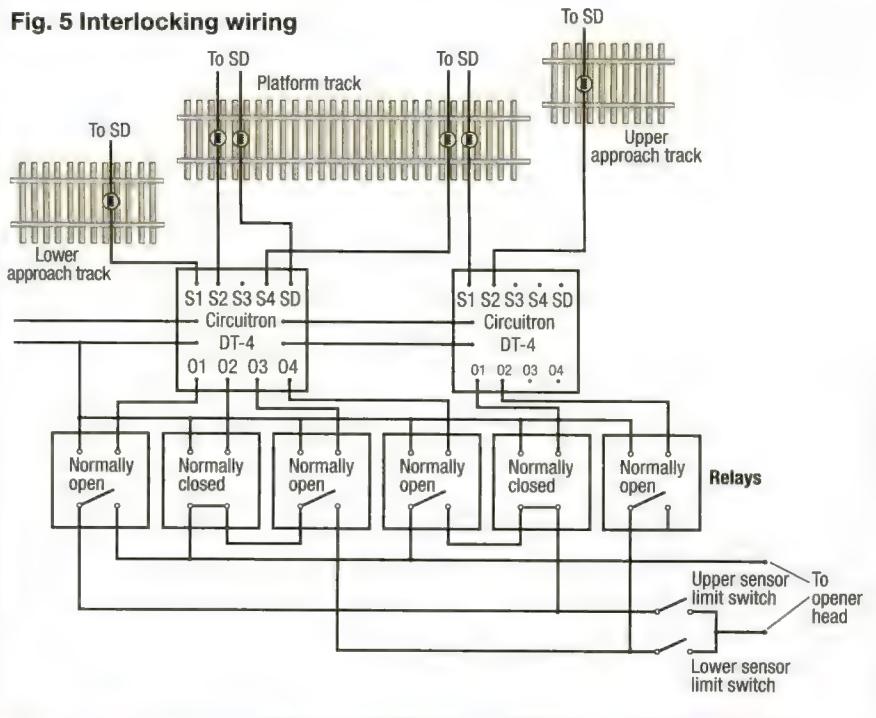


Fig. 6 Lower level alignment. A close-up view shows the platform's tapered pin that drops into a hole in the lower approach to guide the elevator into alignment.

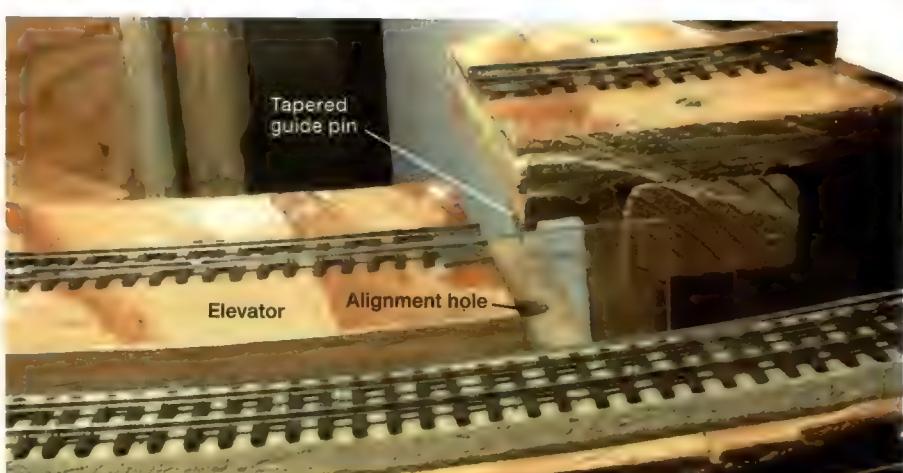


Fig. 7 Upper level alignment. A second tapered pin is mounted beneath the upper approach to engage and align the elevator with the upper level track.

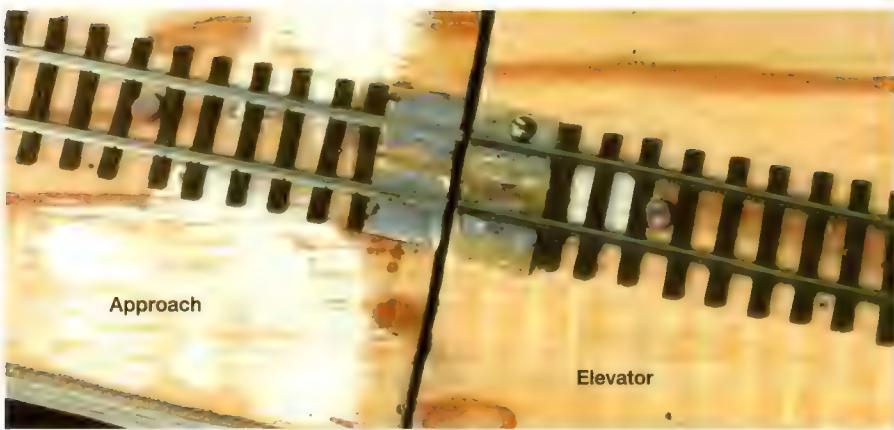


Fig. 8 Alignment plates. To maintain alignment, Steve soldered all the rail ends to brass plates glued to the ends of the approach blocks and elevator platform.

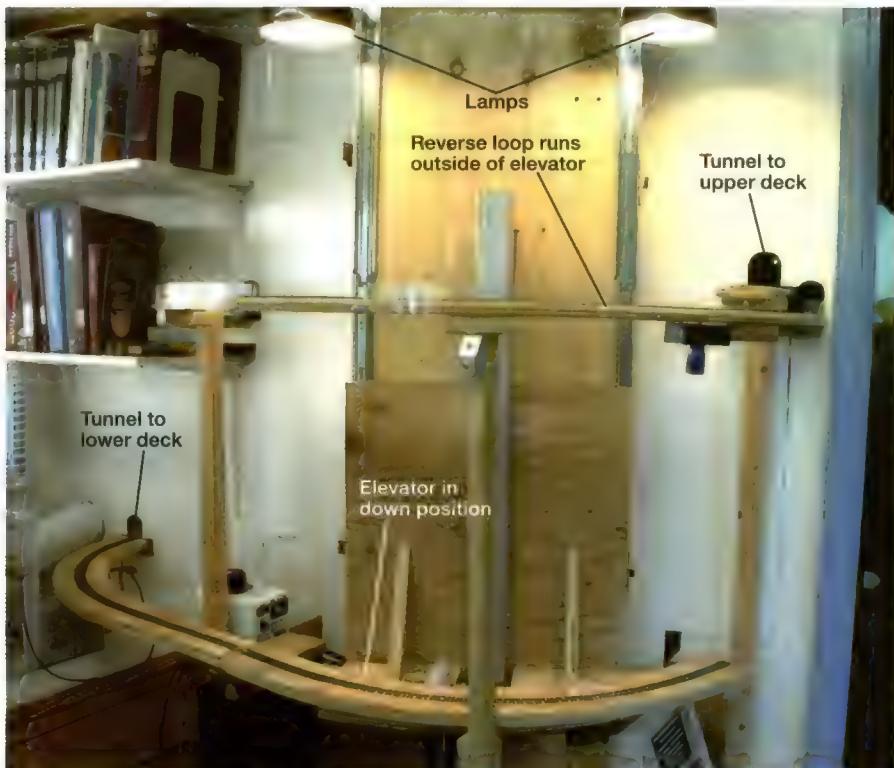


Fig. 10 Safety lamps. This pair of bright lights overrides the room lighting to prevent false activations of the elevator that might damage the trains.



Fig. 9 Limit switch. Limit switches activate the delay timer and complete the circuits to the appropriate platform sensors. They're used to prevent false activations of the elevator.

plenty of time to move on or off the elevator platform safely.

The payoff

Visitors are fascinated by the train elevator and often wait to see it travel between the decks, so the layout sometimes winds up playing second fiddle. My operators love it because the elevator has solved the problem of travel time from one level to the next. All the engineer has to do is run the train into the elevator and then wait for it to release the train on the other deck.

It now takes a little over a minute for a train to travel from one level to the other. Most of this time is used by my slow-moving locomotives hauling trains on and off the platform. This is a great improvement over the seven minutes it formerly took to run through the helix, and it's a lot more fun to watch. **MR**

Steve Harris has been modeling the Rio Grande Southern RR in HO scale since 1978 and has been building his layout in an office trailer since 1993. His narrow gauge layout was featured in the November 2004 and April 2008 issues of Model Railroader, and his article "Weathering your Structures" appeared in the November 2003 MR. He has also published numerous articles in the Narrow Gauge and Short Line Gazette. Steve is retired from the television advertising business and lives with his wife, Susie, near San Diego.



Recognition plaque. Real railroads don't have train elevators, so this device is officially designated as a "D'Elia grade separation equalizer." Upon completion, a dedication ceremony was held where Steve unveiled this plaque to thank the friends who had been instrumental in the elevator's design and construction.

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A video demonstration of Steve's train elevator in action can be found on our Web site at www.ModelRailroader.com.

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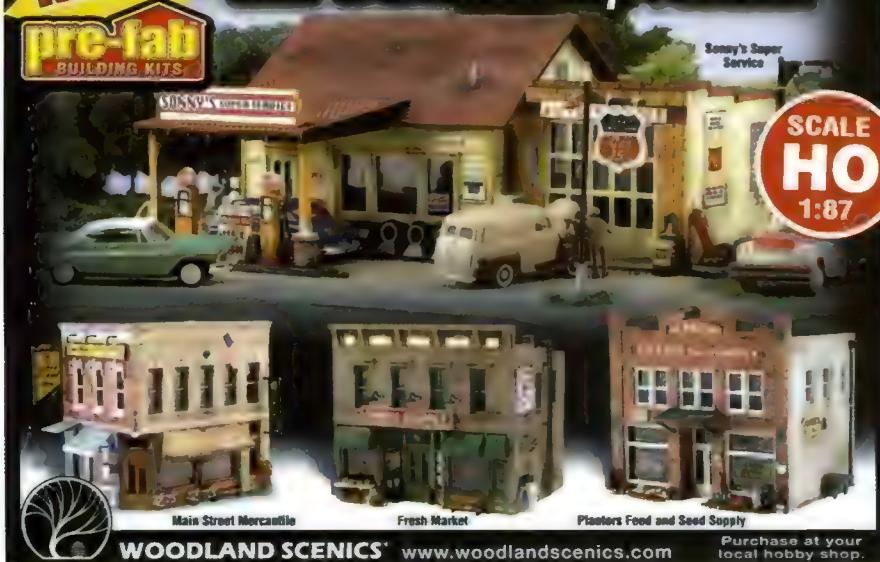
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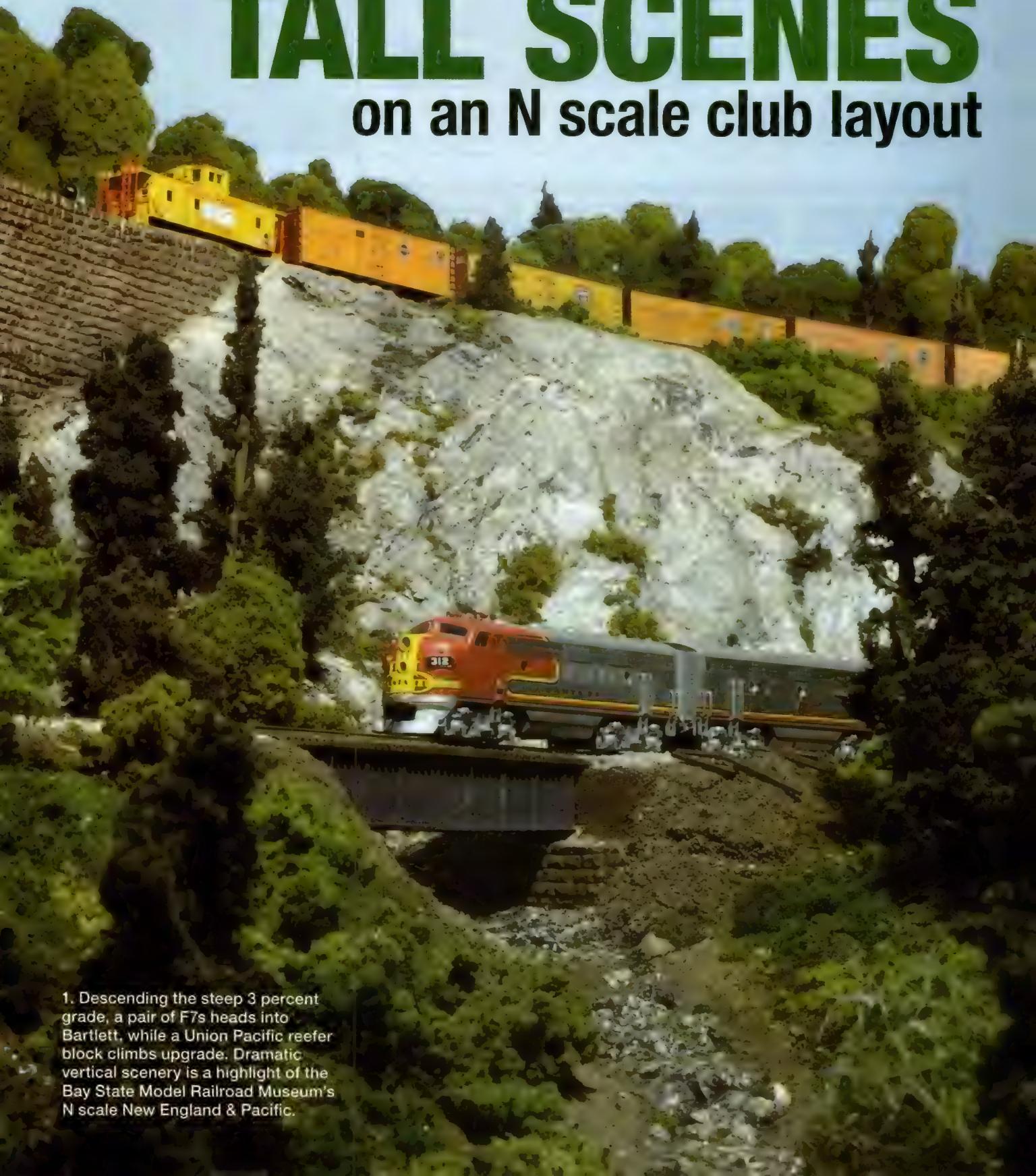
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LONG TRAINS AND TALL SCENES

on an N scale club layout



1. Descending the steep 3 percent grade, a pair of F7s heads into Bartlett, while a Union Pacific reefer block climbs upgrade. Dramatic vertical scenery is a highlight of the Bay State Model Railroad Museum's N scale New England & Pacific.



Running trains on the New England & Pacific at the Bay State Model Railroad Museum

By J. Robert McLaughlin • Photos by Lou Sassi

Towering rock faces and pine forests dominate the scenery of the 17 x 26-foot N scale New England & Pacific. The layout is one of three model railroads built and operated by the Bay State Model Railroad Museum located in Roslindale, Mass., where I've been a member since 1974. Planning for all three layouts began back in 1979, when the club lost its lease and had to move to its current location. [See "The Bay State Model Railroad Museum" on page 70. —Ed.]

The N scale layout takes up less than half the space of either the HO or O scale railroads, yet features dramatic cliffs, 30-car double-stack intermodal trains, and famous passenger trains, including the *Flying Yankee*, *City of San Francisco*, and the *Super Chief*. A mix of road names and eras are represented on the layout, reflecting the members' diverse interests.

Layout construction

In 1979 we completely renovated the club's building, including installing a new ceiling and rest rooms, before beginning any benchwork. It was difficult not to jump right in and start building

layouts, but the finished result gave us a very comfortable place to work and run trains.

For the N scale layout's benchwork we used L-girder construction topped with $\frac{1}{2}$ " plywood and $\frac{1}{2}$ " Homasote. Heavy-duty construction is a must on a club layout. The benchwork includes work lights underneath, which are a big help for troubleshooting wiring.

As layout construction began one of our biggest challenges was the changing nature of N scale equipment: it kept getting better. We made several major changes to the track plan. As manufacturers came out with more powerful locomotives and larger rolling stock such as auto-racks and modern intermodal cars, we had to lengthen passing sidings and redesign yards to accommodate longer trains.

Tracklaying began during the 1980s. We used Peco code 83 flextrack and turnouts because we felt that they were the best products available at the time. Now the club is replacing some of the old code 83 track with code 55 track in high-visibility locations. The lower profile of code 55 rails looks more prototypical than the taller code 83 rails.

2. An EMD SD70 diesel in the contemporary BNSF "wedge" livery leads a hotshot intermodal train past the sawmill on its way into Bartlett, while a shay pulls a cut of log cars from the siding. The club's layout hosts a freelanced mix of equipment in various road names and eras.

Mountain scenery

Although a wide variety of locomotives and rolling stock runs on the New England & Pacific, the layout is loosely inspired by the Maine Central RR in northern New England. Many towns on the layout are named for communities along the Maine Central's line from Portland, Maine, to St. Johnsbury, Vt. We also modeled such landmarks as the massive Frankenstein Trestle and Gateway Cut through the White Mountains of New Hampshire.

The hardshell scenery base is Hydrocal, and the club used rubber molds to form the high rock cliffs. We applied ground cover in various textures and colors from several manufacturers to the scenery base. All water features were made by pouring Envirotex resin over the painted scenery base.

There are hundreds of deciduous and pine trees on the layout. (After all, Maine is the Pine Tree State.) Along with Woodland Scenics products and Scenic Express SuperTrees for foreground trees, the club used twigs from wild blueberry and bayberry bushes, arbor, and other natural materials to forest the layout.



3. Crossing the bascule bridge toward Whitefield, two Conrail General Electric C30-7A diesels bring up the rear of a coal train. The club members used Hydrocal and rubber molds to cast the cliffs.

Structures and rolling stock

Most of the structures on the layout are plastic models from various manufacturers, often kitbashed to fit a particular location. Another advantage of working in N scale, especially on a layout as large as ours, is that we can model many large structures, such as the 20-stall roundhouse in Rigby Yard. We rarely have to selectively compress buildings to fit into a limited space.

There are only a few craftsman-level wood structures on the layout, and we avoid superdetailing structures. Small detail parts are the first things to be broken loose from a stray elbow during an operating session. Models on a club layout usually endure more abuse than on a typical home layout.

For the same reason, the club doesn't collectively own any rolling stock. It's a big enough job making sure the wiring and track is in good condition. Every piece of equipment from a humble boxcar to an exquisite brass steam locomotive is from our personal collections. Some models are in pristine out-of-the-box (or out of the paint shop) condition, while others are well weathered.

Evolving operations

The New England & Pacific is wired for cab control with block controls placed every few feet for walkaround operation of the main line. Built with military-spec rotary switches, these control panels have withstood more than 20 years of operation. Club members on the electrical team carefully



4. Rigby Yard and the city of Portland, Maine, are near the entrance to the club's layout room. Structures include a power plant and engine terminal with a roundhouse, turntable, and coaling tower.

The layout at a glance

Name: New England & Pacific
Scale: N (1:160)
Size: 17 x 26 feet
Prototype: Maine Central RR Mountain Division (freelanced equipment)
Locale: Portland, Maine, to St. Johnsbury, Vt.
Era: steam-to-diesel transition to current era
Mainline run: 200 feet
Minimum radius: 24"
Minimum turnout: no. 8
Maximum grade: 3 percent
Benchwork: L-girder with door panels
Height: 48" to 66"
Roadbed: 1/2" Homasote on 1/2" plywood
Track: Peco code 70 flextrack
Scenery: Hardshell with zip texturing and ground foam
Control: walkaround cab control



Bay State Model Railroad Museum N scale division

N scale (1:160)
Layout size: 17 x 26 feet
Scale of plan: $\frac{1}{8}$ " = 1'-0", 24" grid
Numbered arrows indicate photo locations

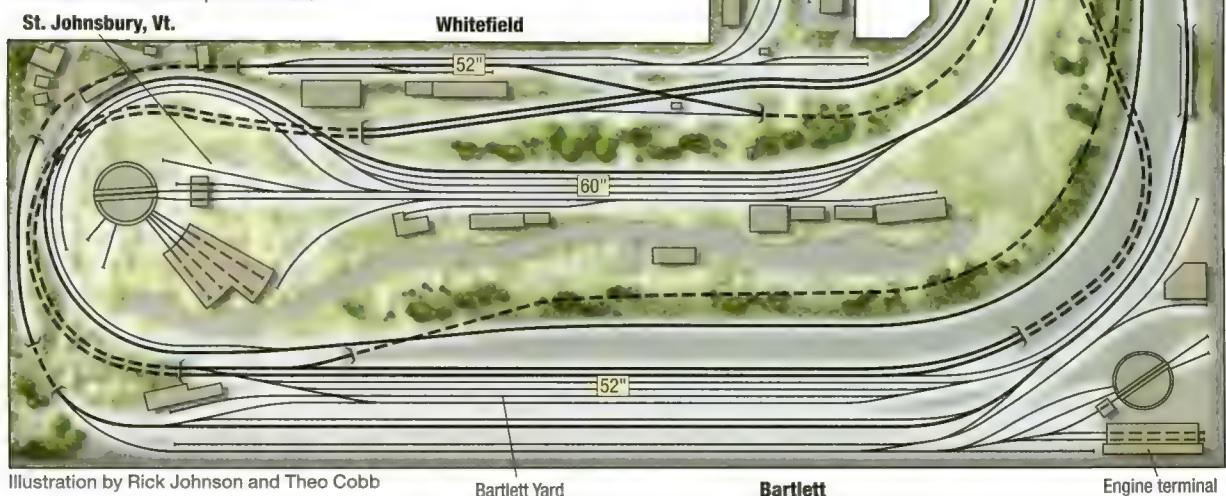


Illustration by Rick Johnson and Theo Cobb

Bartlett Yard

Bartlett

Engine terminal



5. Looking right at home in the layout's northern New England setting, the Flying Yankee streamliner emerges from the Gateway Cut. The model is a repainted and detailed Con-Cor Pioneer Zephyr.

The Bay State Model Railroad Museum

Founded in 1968, the Bay State Society of Model Engineers built and operated HO and O scale layouts until 1979, when the club was evicted from the space it rented. That year the club purchased its own building in Roslindale, Mass., complete with 4,000 square feet of usable space for its N, HO, and O scale layouts. Now called the Bay State Model Railroad Museum, the club rents other parts of the building to commercial tenants to help pay the mortgage.

Over the years the club averages 55 members: eight in the N scale division, seven in O scale, and the remainder in HO scale. The average length of membership is 20 years. We actively recruit younger members and have many members (and club officers) who are 30 years old and younger.

The club has been featured in *Model Railroader* three times previously. Club news in the April 1982 issue described the move to its current location. "Building for the future" in the January 2002 issue chronicled the club's experiences renovating the new building. The most recent article was in the July 2005 issue and provided a look at the club's 50 x 62-foot HO scale layout. The club's HOn3 layout is slated to appear in *Great Model Railroads 2010*. —J.R.M.



Some of the current members of the Bay State Model Railroad Museum's N scale division include (from left to right): Mark Ferracane, Charlie Stoddard, Steve Shaw, Dan Leavitt, Ian Kempf, Jeremy Hartwell, and Ron Croati.

documented the wiring plan of the layout before construction, which has proved invaluable for trouble-shooting.

Up to six operators at a time can run the layout, using Aristo-Craft wireless throttles. This system has proven reliable over the years, but the club will add Digital Command Control to the layout in the near future.

Many members of the N scale division participate in the formal operating sessions held on the club's HO scale layout. Gaining experience and learning techniques for realistic operations from the HO division members, the N scale division is starting to hold its own operating sessions.

There are many rail-served industries on the New England & Pacific, including lumber mills and coal mines. The town of Bartlett features an intermodal terminal to add some modern-era through-freight traffic.

Why join a club?

Our layout is 95 percent complete in terms of scenery, but a model railroad is never really finished. In addition to updating track and adding DCC, we're refreshing scenery and replacing some older structures.

Whether you're part of an operating crew on a long-running layout like ours or you're working with a group that's building its first model railroad, there are many advantages to joining a club. Perhaps the biggest advantage is that you'll learn more about model railroading in a club than you will by building a layout on your own.

When you build a home layout, it's only as good as your skill level. In a club you have access to members with areas of expertise that may be different than yours. Say you're a scenery whiz, but not that great at electrical work. Odds are your club will have an electrical expert.

Most importantly, you're likely to make some lifelong friendships, as I've discovered after being in the same club for so many years. That's been a blessing that I wouldn't have found running trains solo in my basement. **MR**

J. Robert McLaughlin is a 35-year veteran of the Bay State Model Railroad Museum. This is his fourth article about the club. He is the retired director of special education for the Boston school system and has two grown children.

More on our Web site

See freight and passenger trains run through various scenes on the N scale New England & Pacific. Watch the video at www.ModelRailroader.com.

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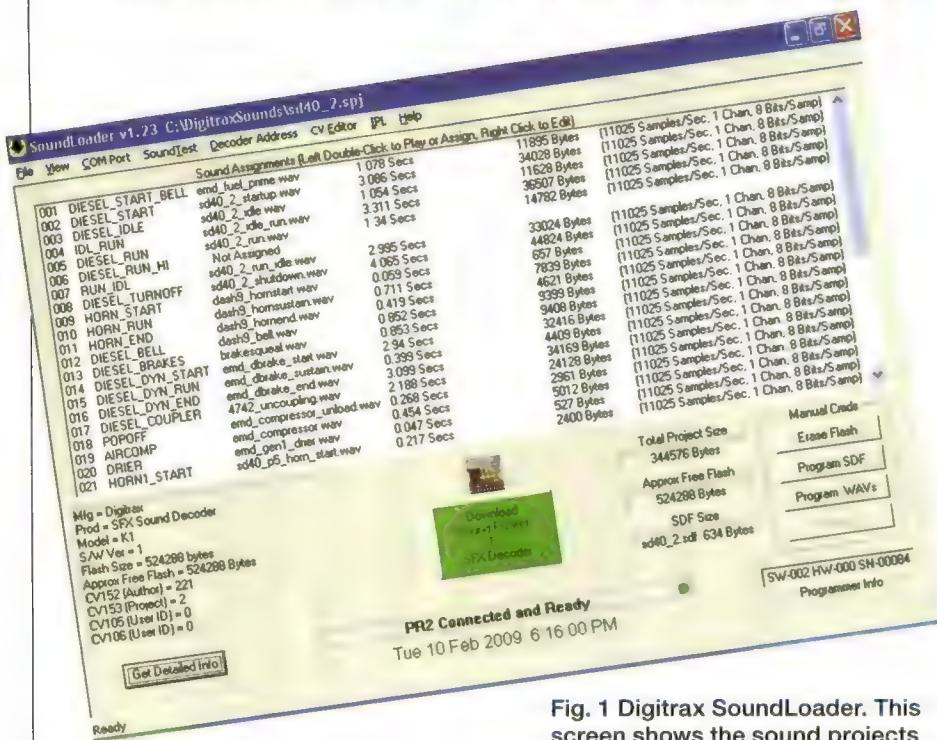
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Download new sounds for DCC decoders



Locomotives with Digital Command Control (DCC) and sound are becoming increasingly popular. However, not all sound decoders may come with the full complement of effects needed for a specific locomotive, such as the correct air horn or steam whistle. Thanks to software available from three different manufacturers, you can change the sound files on your decoders to match the prototype.

How sound decoders work. Most people are familiar with how sounds are recorded onto cassette tapes. The sound waves that travel through the air are captured by a microphone, which changes them into analog electric signals. These signals are converted into magnetic pulses that are captured on tape.

Digital sounds are recorded in much the same way, except the analog electrical signals are converted into digital signals through an analog-to-digital converter. The signals can be stored on memory devices, such as a flash drive, until they're needed.

When the sound is played back, the digital signal is converted to analog by a digital-to-analog converter, amplified, and sent to a speaker that allows you to hear it.

Fig. 1 Digitrax SoundLoader. This screen shows the sound projects available for downloading. You can also modify existing sound projects with .wav standard sound files.

Sounds from real locomotives are recorded and saved in digital computer files that are loaded into the memory devices in a sound decoder. However, it would be impractical to record hours of an Electro-Motive Division SD40-2 running in notch 8 to be played back in your model. The sound files stored in decoders are small snippets of various noises that are looped to provide continuous sound. Most decoders are capable of playing two or more sounds at the same time.

Upgrade software. Digitrax, ESU, and QSI allow you to change the data inside their memory chips to alter the sound a decoder produces. You can make big revisions, like changing a steam sound decoder to diesel, or minor upgrades, such as converting a Nathan M3 air horn to a P3.

To alter a sound decoder, you need a computer, an Internet connection, the firm's software, a decoder programmer for the particular make of decoder, and an isolated piece of track (i.e. not part

of your model railroad). When purchasing the software, make sure it's compatible with your computer's operating system. I'd also recommend a sound card and speakers so you can preview the sounds before loading them into the decoder.

Though many sound decoders come with a speaker, you may use your own as long as its impedance matches the decoder's requirements.

Digitrax has a number of different sound decoders that range from plug-and-play designed for a specific locomotive to a wire-installation generic decoder that fits in a variety of locomotives. It also has sound-only decoders that can be added to locomotives with non-sound decoders.

The firm sells two different sound programmers. The PR2, which plugs into the serial port of a computer, is the original programmer capable of downloading sounds into Digitrax decoders. The newer PR3 uses the computer's USB connection. Both use Digitrax's SoundLoader software.

Digitrax offers numerous sound projects on its Web site, www.digitrax.com/sounddepot.php. These are a collection of different effects that, when downloaded into a computer, provide all the sounds necessary for a specific locomotive. You can also modify an existing

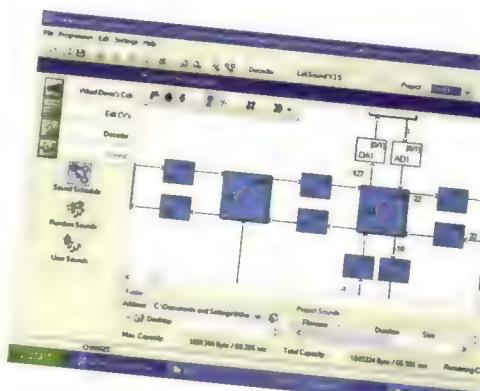


Fig. 2 LokSound Programmer. ESU's software includes a diagram showing when each sound effect will occur. This is useful when creating a sound sequence for locomotive acceleration and deceleration.

sound project with your own .wav standard sound files.

The projects consist of three pieces for each sound: start, run, and end. See **fig. 1**. Start is a non-looped audio file that's used when a particular sound (the horn, for example) is activated.

The run portion loops as long as that sound is required, and the end is used when that particular sound is turned off. The sound projects also have several individual and user-controlled sounds that can be activated with your throttle's function buttons.

SoundLoader has a mode that allows you to test your locomotive's sound and motor function without a DCC system.

ESU was the first firm to offer downloadable sound files. Its LokSound Programmer connects to a PC with either the serial or USB ports, and uses its own software to download the sounds.

Similar to Digitrax's Sound-Loader, you can build your own sound projects using .wav files, or you can download factory sound projects from the ESU Web site, www.loksound.com. The ESU sound projects include a start, middle, and end, all of which can be looped. In fact, the sound schedule is quite extensive, allowing for transitional sounds when going from one effect to the next.

The software includes a diagram of when each sound clip occurs, as shown in **fig. 2**. For example, if your locomotive is going from notch 1 to notch 2, a programmable sound will occur, and it can be different than the sound from notch 2 to notch 3.

There are also stationary sounds that occur when the locomotive is standing still (like idle) and random noises like pop valves.

QSI is the sound decoder used by Atlas, Broadway Limited, and Proto 2000 from Walthers, among others. The aftermarket Quantum Revolution decoder is sold by QSI Solutions. The Quantum Revolution is available for Athearn, Atlas, Kato, and Stewart HO scale locomotives. It's also offered in a wireless version, and there are a number of G scale Revolution decoders available as well.



Fig. 3 Quantum Programmer. Though you can't create your own sound projects with this software, there is an extensive library of factory sounds to pick from. Here, Mike has selected the sound file for an Electro-Motive Division GP9.

Both the original equipment and aftermarket decoders can be programmed with the Quantum Programmer. However, older QSI decoders may need a firmware upgrade, which is done by replacing a memory chip on the decoder.

The Q1a program (Q2a for G scale locomotives) shown in **fig. 3** runs on a PC. At this time, you can't create your own sound projects, but there is an extensive list of factory-made projects online at www.qsisolutions.com/index.html.

The Quantum Programmer, together with a computer and QSI Solutions CV Manager software, can act as a mini-command station that can run multiple locomotives at once. You can increase the track power of this setup by connecting it to a booster. This is useful when speed-matching locomotives.

Downloading new sounds into decoders is increasing in popularity, and the number of ready-made sound projects is getting larger. If you have sound clips available, you can even make your own sounds. With a PC and some basic computer skills, you can make your model locomotives sound more like the real thing. **MR**

Send your questions about Digital Command Control to DCC Corner, *Model Railroader* magazine, P.O. Box 1612, Waukesha, WI 53187, or e-mail dcc@mrmag.com. We regret we can't answer all the questions we receive.

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Product Reviews



Upgraded HO scale AC6000CW debuts the Paragon 2 DCC sound decoder

Including a Digital Command Control sound decoder and dual speakers, this HO scale AC6000CW captures the rumble of its 6,000-hp prototype. The Broadway Limited Imports Paragon 2 AC6000CW uses the same tooling as the model we reviewed in the May 2006 *Model Railroader*, but includes a new dual-mode sound and control system.

Prototype. General Electric built 207 AC6000CW diesels between 1995 and 2000. Union Pacific and

CSX were the only two domestic railroads to purchase the 6,000-hp behemoths. Eight AC6000CWs went to BHP Iron Ore in Australia. The Southern Pacific ordered three, but they were delivered to the Union Pacific after the 1996 UP/SP merger. (BLI sells a Canadian Pacific version, although the CP never owned any AC6000CWs.)

Union Pacific also purchased 107 AC6000CW "convertibles" from GE. These diesels were built with 4,400-hp 7HDL16 engines that could be replaced at a future date with a 6,000-hp engine. The AC6000CW has two exhaust stacks, and the convertible version has just one.

The BLI model is of a "true" AC6000CW and has the twin exhaust stacks. All of the HO diesel's dimensions match drawings of an AC6000CW from the September 1996 *Model Railroader*.

Details and paint. Our sample represents Union Pacific no. 7511 in its as-built paint scheme. Paint coverage is smooth and the lettering placement matches prototype photos. Many of the warning stencils along the body and sill are readable under magnification,

although a few were out of register and illegible.

The plastic body shell has crisp molded detail, although the pattern of the grid panels under the radiator intake doesn't match prototype photos. The model has many separately applied details, including acetal handrails, hand grabs, and windshield wipers.

Our sample has detailed plastic truck sideframes that represent the high-adhesion trucks correct for the Union Pacific prototype. The CSX and BHP versions have the correct steerable trucks.

The model is available with high- or low-mounted ditch lights as per each prototype. The ditch lights alternately flash when the horn is blown. Headlights and number boards are also illuminated by white light-emitting-diodes.

Drivetrain. The can motor is mounted in the center of a die-cast metal frame. Two universal shafts

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Reviewed in this issue

- 76 Atlas HO scale HH600/860 diesel switcher
- 78 Lenz Gold Maxi large scale DCC decoder
- 79 Walthers HO scale Super Domix passenger car
- 80 HO slab-sided hopper N scale passenger station
- 82 HO scale service station N scale 10-6 sleeper



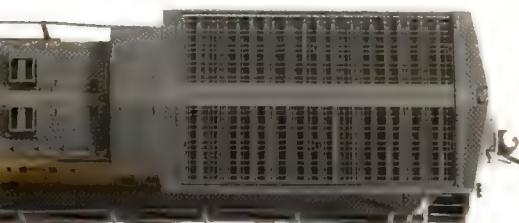
and worms transfer power from the motor to truck-mounted gearboxes.

All-wheel drive and the die-cast metal frame and fuel tank give the model a drawbar pull equivalent to 70 free-rolling HO freight cars on straight and level track.

The Paragon 2 AC6000CW also performed well in our DC and DCC speed tests. The model creeps along at 1 scale mph without any hesitation and accelerates smoothly throughout its speed range. The model's top speed of 69 scale mph (60 scale mph in DC mode) is a bit lower than that of its prototype, which can attain 75 mph.

A drawback for DC users is that the AC6000CW, like other sound-equipped locomotives, requires a lot of voltage to start moving.

DCC operation. The dual-mode Paragon 2 sound decoder is mounted in a plastic cradle above the motor. Two downward-facing speakers are enclosed in the fuel



Details on the model include see-through radiator grills.

tank. The overall sound quality is excellent with no buzz or rattle.

I tested the locomotive in DCC using an MRC Prodigy Advance Squared. The decoder has 28 functions, including the horn, bell, coupler sounds, and radio messages. Functions 18 to 21 play random city, farm, industrial, and lumber mill background sounds. I found these sounds distracting, since they came from the locomotive and not the scene around it.

You can record locomotive operations, including specific sounds, and play them back using functions 26 and 27. I recorded and played back a sequence that included brake release sounds, radio messages, and a grade crossing signal. You can set the sequence to play back one to 14 times, or indefinitely.

I easily controlled the engine rpm sounds independently from the model's speed, using functions 5 and 6. There are seven rpm levels.

I also set configuration variable (CV) 245 to 3, which causes the engine rpm sounds to automatically rev up before the model starts moving. The duration of the delay is adjustable by setting CV 248.

I programmed other CVs, including changing the locomotive's long address. All the programmable CVs are listed in the included instruction booklet. An extensive technical manual is also available at www.broadway-limited.com.

Sound and programming in DC. At 6.5 volts the locomotive's lights turned on and the sounds of a start-up sequence began. Engine rpm sounds increased as I advanced the throttle. The model makes squealing brake sounds when the throttle is rapidly decreased.

To trigger specific sounds or to program CVs you need to use a DC Master Analog Control Module, sold separately by BLI. The DC Master has a horn and bell button as well as an AUX button.

The default setting for the AUX button is the air compressor sound when the locomotive is still and the dynamic brake sound when the locomotive is moving. You can

► HO scale AC6000CW

Price: \$249.99

Manufacturer

Broadway Limited Imports, LLC
4 Signal Ave.

Ormond Beach, FL 32174
www.broadway-limited.com

Road names: (two road numbers) Union Pacific, BHP Iron Ore (blue or "bubble" paint schemes), Canadian Pacific, CSX, and Southern Pacific. GE "Green Machine" no. 6000 and GECX no. 6001. Undecorated versions also available.

Features

All-wheel drive and electrical pickup
Dual-mode DCC sound decoder with 16-bit sample rate
Five-pole skew-wound motor with dual brass flywheels
Minimum radius: 22"
Operating magnetic knuckle couplers at correct height
RP-25 contour metal wheels in gauge
Weight: 27 ounces

BLI Paragon 2 HO AC6000CW

Drawbar pull	5.0 ounces
	70 HO scale freight cars
Scale speed (DC)	Scale speed (DCC)
Volts	Speed step Scale mph
8.25 (Start)	1 1
10	20 7
11	52 14
12	60 28
Current draw at 12 volts (DC)	Slipping .2A
	Stalled .22A

change which function the AUX button controls by setting CV 222 to a specific function number.

I programmed other CVs with the DC Master, including individual volume levels and starting voltage. A list of CVs commonly used by DC operators is included in the instruction booklet.

With its impressive sound and programmable features, the BLI Paragon 2 AC6000CW is a worthy depiction of this high-horsepower, modern-era thoroughbred. — *Dana Kawala, associate editor*



HO Alco high-hood switcher fits many eras

An excellent HO scale model of an Alco HH600/660 switcher is the latest diesel locomotive released by Atlas. It's a model of an early diesel engine that dates to the 1930s.

This ready-to-run model has a powerful, smooth-running, dual-flywheel drive fitted into a superbly detailed styrene body. The unit has numerous individually applied detail parts and a set of well-proportioned flexible acetal plastic railings. The cab includes clear window glazing and there's an engineer and control stand inside.



Atlas includes open vents in the Alco's clear window glazing.

Prototype. Alco introduced the HH600 (high hood, 600-hp) in 1931. The Atlas model is a later HH600/660 that debuted in 1938 after Alco hired industrial designer Otto Kuhler to clean up the switcher's appearance. These later engines had rounded hood corners.

By varying the maximum rpm of its new 538 engine, Alco offered this locomotive in both 600-hp and 660-hp versions that shared identical hoods. Interestingly, all of the high-hood units had an unusual machinery layout that was reversed compared to most other switchers. These units had their cab and generator at opposite ends, with the radiators mounted in the hood sides close to the cab.

Alco built 78 HH600s and 43 HH660s between 1932 and 1940. They rode on Alco's Blunt trucks and were easy to service in the field, so some operated in industrial switching roles for nearly 40 years.

The model. The Atlas switcher closely matches the overall dimensions shown in Alco sales literature. It comes with a single exploded isometric drawing that shows how the locomotive is assembled.

This model follows Atlas' typical construction, starting with a body shell made up of several interlocking detailed styrene castings. The high hood, cab, and cab interior

snap-lock into the running board assembly, and numerous details press-fit into holes molded into the larger parts.

The Alco's mechanism also follows Atlas' proven design. It has a heavy cast zinc-alloy frame with a five-pole can motor and turned brass flywheels mounted above the fuel tank. Its Blunt switcher trucks have enclosed gearboxes, and both trucks are retained with snap-on clips. An acetal plastic universal joint connects each truck to the motor. A set of eight safety chains are included for user installation between the trucks and the frame.

The switcher has RP-25 contour blackened nickel-silver wheels that match the National Model Railroad Association standards gauge. All eight wheels are driven and all pick up current.

Flexible wires and plugs connect both trucks and the headlights to the printed-circuit board that controls the directional lights. The PC board also includes an 8-pin socket and jumper plug for easy installation of a Digital Command Control (DCC) decoder. There's enough space inside the tall hood to mount a small DCC decoder on top of the mechanism.

Our sample came with body-mounted Accumate magnetic knuckle couplers, but other couplers can be substituted easily. The

► HO Alco HH600/660

Price: \$149.95

Manufacturer

Atlas Model Railroad Co.

378 Florence Ave.

Hillside, NJ 07205

www.atlasrr.com

Road names: (two numbers each)

HH600: Elgin, Joliet & Eastern; Erie; New York, New Haven & Hartford

HH660: Maine Central; Milwaukee Road; Southern

Pacific

Features

DCC socket

Directional, constant headlights
Dual flywheel drive

Engine weight: 7.5 oz.

Eight-wheel electrical pickup

Five-pole can motor

Minimum radius: 15"

Nickel-silver RP-25 contour
wheels

Atlas HO HH-600 diesel switcher

Drawbar pull	Scale speed (DC)
Volts	Scale mph
2.24 ounces	1.1
31 HO freight cars	14.4
Current draw at 12 volts (DC)	59.0
Slipping	83.7
Stalled	.96A

model's coupler height is correct per NMRA standard S-2.

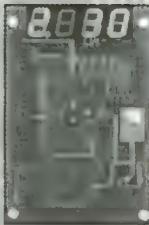
Performance. Our sample switcher started and ran smoothly at one scale mph. This excellent performance continued throughout the model's speed range. The switcher's drawbar pull is equivalent to 31 free-rolling freight cars on straight and level track.

The Elgin, Joliet & Eastern sample came neatly painted black with sharp, white lettering typical of most early switchers. Five other appropriate early paint schemes are also available in two numbers each.

Overall, this new HO diesel switcher delivers excellent detail, a quality finish, and a smooth-running mechanism. Since it spans the steam-to-diesel transition period, it can be useful in many different roles. — *Jim Hediger, senior editor*

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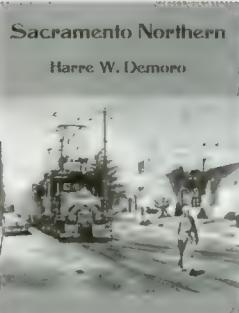
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— Bob Peterson, WI

Gold Maxi DCC decoder is big on features

If you're looking for all the same great control features that Digital Command Control (DCC) has to offer in smaller scales for your O scale or large scale trains, then take a look at the Gold Maxi decoder and Power 3 energy storage module from Lenz. The combination of decoder and power module components makes for some outstanding motor control characteristics that you can't get with other decoders.

The Lenz Gold Maxi is made for O scale and larger locomotives. It has a 3-amp continuous motor operation rating, a 5-amp maximum, and a 10-amp stall limit. The decoder can easily handle dual-motored locomotives.

The Lenz decoder measures .47" x 1.14" x 2.76", and the Power 3 module is .42" x .98" x 1.3".

To test the decoder, I installed the Gold Maxi and a Lenz Power 3 energy storage module in a Bachmann 1:20-proportion two-truck shay. Both the decoder and the Bachmann shay use screw terminals to make wiring connections, so the installation process took me all of 10 minutes.

The Power 3 module is made with Super Caps capacitors, which charge rapidly and have a long service life. Essentially it's the capacitors that allow the engine to operate for periods of time over very dirty track where the wheels have no electrical contact with the rails.



With the decoder and power module, our test engine negotiated track covered with masking tape.



The Gold Maxi Digital Command Control decoder and Power 3 energy storage module from Lenz make for smooth DCC operation.

also works great for running through turnouts with insulated frogs.

Dirty test track. I set up a rugged test track in our workshop to try the decoder in the shay. The track started with three feet of clean rail. The rest of the 24-foot run was made up of track that had been neglected outdoors for several years. In fact, the track was so dirty that nothing, including the shay, would run on one eight-foot stretch of it using a DC power pack. That proved not to be the case with the Lenz Gold Maxi and Power 3 module. The locomotive moved effortlessly from the clean track to the dirty track and back again. Though the headlight would flicker, I was able to control the motor at all times.

Deciding to up the ante a bit, I covered a three-foot section of the rails with masking tape. The shay, with all eight wheels on the tape, kept running, and I still had DCC motor control throughout the tests.

In all these cases, the Power 3 module kept the motor turning. If I ran the locomotive on top of the masking tape for more than 15 seconds, the capacitors would finally drain completely and the locomotive would stop. The proprietary technology Lenz uses in the decoder allows it to continue receiving DCC signals, even with the tape

Gold Maxi DCC decoder

Price: \$89.95 Gold Maxi; \$59.95 Power 3 module

Manufacturer

Lenz Agency of North America
P.O. Box 143
Chelmsford, MA 01824
www.lenz.com

Decoder features:

3-amp continuous motor rating
10-amp stall limit
8 function outputs
7 programmable lighting effects
RailCom bi-directional communication allows for CVs to be read back while in OPS mode (programming on the main)
Uninterruptible Signal Processing (USP)

Decoder may be used with Lenz Power modules or with batteries to provide extended operation over dirty track

between the rails and the wheels – the feat seems as close to magic in model railroading as you can get.

Among the Gold Maxi decoder's other standard features are eight function outputs, back-electro-motive-force (BEMF) control, Uninterruptible Signal Processing (USP), Rail COM bidirectional communications, and a Serial User Standard Interface (SUSI) for use with outboard sound modules. We reviewed these features when we looked at the Lenz HO Gold decoder in the January 2006 issue of *Model Railroader*, so for more information, look for that article in our product review database at ModelRailroader.com.

The fine motor control, uninterrupted DCC signal, and smooth operation over an assortment of track contact problems make the Gold Maxi a good option for O scale or larger trains. And, without a doubt, the Lenz Gold Maxi decoder and Power 3 module make it possible to operate an outdoor garden railroad reliably with DCC.
– David Popp, managing editor

More on our Web site

Current subscribers can see a video of this decoder in action on the March 5, 2009 episode of *Cody's Office* at www.ModelRailroader.com.



Super Dome in HO scale recalls the glory days of the Twin Cities Hiawatha

A ready-to-run HO scale model of a Milwaukee Road *Super Dome* car completes the Walthers 1955 *Twin Cities Hiawatha* passenger set. The model accurately depicts the last new car type to enter *Hiawatha* passenger service.

Prototype. In 1952 Pullman-Standard built 10 *Super Dome* cars for the Milwaukee Road at a cost of \$320,000 apiece. The cars were numbered 50 to 59. (Car no. 50 was wrecked during a test run in 1953 and had to be rebuilt.)

Each car weighed 224,000 pounds and rode on specially designed six-wheel trucks. At that time, the trucks were the largest ever applied to passenger equipment. Using 635 square feet of glass, the *Super Dome* roof used 35 percent more glass than any other dome car.

Unfortunately the *Super Dome* cars didn't prove as successful as other dome cars. The cars rode rough and the high bulkheads at each end of the car restricted the view forward. After the Milwaukee Road discontinued the *Olympian Hiawatha*, the railroad sold six of the 10 *Super Dome* cars to Canadian National. Some of the cars still serve on tourist railroads.

The Walthers HO model matches dimensions of the prototype in the *Simmons-Boardman 1953 Car Builder's Cyclopedie*.

Paint and construction. Our review sample is decorated in the prototype's as-built orange/maroon livery. The paint is smooth and evenly applied with crisp separation lines between the stripes. The colors and stripe width match that of the other Walthers HO 1955 *Twin Cities Hiawatha* cars and the Proto 2000 E7A diesel locomotive.

Lettering placement on the model matches prototype photos. A decal sheet is included so the car can be numbered for any of the 10 *Super Domes*.

The Walthers model is built primarily of plastic. The applique car sides fit onto a core body. All grab irons have to be installed by the modeler, but starter holes are included on the model and grab iron placement is shown on the instruction sheet.

The instruction sheet also shows how to remove the dome roof. I used a hobby knife to carefully release the locking tabs that hold the dome roof to the car body. Then I lifted out the upper level interior to reveal the lower level. The seating arrangement of each level matches prototype floor plans.

Both interior levels are molded in light tan plastic. The upper level seats are painted brown. No additional painting was done to the lower level.

Aside from a couple of cylindrical tanks to the rear of the lounge

► HO scale *Super Dome*

Price: \$64.98

Manufacturer

Wm. K. Walthers Inc.
P.O. Box 3039
Milwaukee, WI 53201
www.walthers.com

Paint schemes: Milwaukee Road orange/maroon and Milwaukee Road yellow/gray (post-1955). Undecorated version also available.

Features

Detailed interior
Metal Proto-Max magnetic knuckle couplers at correct height

Minimum radius: 24"
RP-25 contour 36" metal wheelsets in gauge
Weight: 8 ounces (1 1/8 ounces too heavy per National Model Railroad Association RP-20.1)

compartment, the car doesn't have much underbody detail. The *Super Dome* rides on die-cast metal trucks and metal wheels. The crisply molded details on the truck sideframes match prototype photos. There are also two wipers above each truck for an interior lighting kit (sold separately).

The HO scale *Super Dome* is an accurate model of this historic car and looks great as part of the complete Walthers 1955 *Twin Cities Hiawatha* consist. —D.K.

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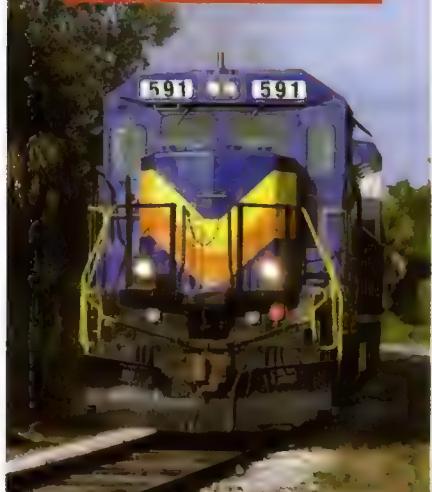
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Both the upper and lower level floor plans of the Walthers HO scale *Super Dome* match the prototype. The upper-level seats are separate parts.

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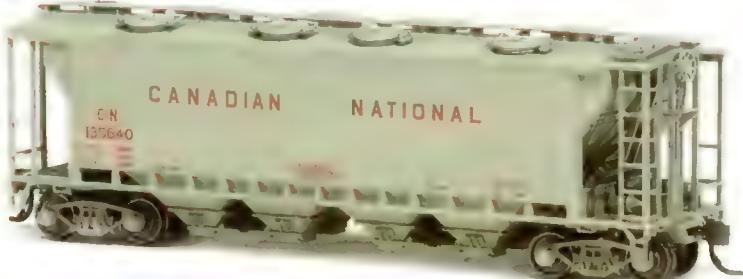
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Product Reviews

► HO Canadian National covered hoppers



Price: \$39.98

Manufacturer

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140 Applewood Crescent
Concord, Ont., L4K 4E2
Canada

www.hobbycraft.com

Comments: A series of distinctive Canadian National "slab-side" covered hoppers is now available ready-to-run in HO scale. These all-plastic models represent 70-ton prototypes built for the CN in the 1950s.

The models include versions with six rectangular roof hatches or eight round hatches, and they're offered in gray with small

red Gothic lettering, large Gothic lettering, or the 1970s billboard CN noodle herald. Six different car numbers are available in each paint scheme.

The model has excellent rivet and seam details and all of the running boards and the brake platform have open gratings. Our samples came with appropriate solid-bearing trucks with RP-25 contour wheelsets that match National Model Railroad Association standards. The McHenry couplers are body-mounted at the proper height.

The "slab side" covered hopper is an accurate HO model of its Canadian prototype. — J.D.H.

► The N Scale Architect Cranston station

Price: \$59.95

Manufacturer

The N Scale Architect
4063 County Highway 2
Delancey, NY 13752
www.thenarch.com

Comments: This multi-media kit is based on a New York, New Haven & Hartford prototype in Cranston, R.I. The kit, which has a footprint of $2\frac{1}{8}$ " x $3\frac{1}{2}$ ", uses tab-and-slot construction and peel-and-stick windows and trim. It also includes an outhouse with privacy fence, white-metal chimney, and clear window glazing.

Though the kit is fairly easy to assemble, some of the detail parts are delicate and need to be handled with care. For example, I broke the front trim when smoothing out the nub where it was attached to the carrier sheet.

The platform, steps, and subroof are $\frac{1}{16}$ " Taskboard, a



biodegradable wood fiber board available from the N Scale Architect. This material can be painted with acrylic or organic solvent-based paints.

The only drawback with the kit, and a very minor one, is that the shingles are printed on white paper. Cutting them from the sheet leaves a white edge. However, I was able to fix this by lightly rubbing a pencil point along the cut edges.

If you've never assembled a multimedia kit before, try building the Cranston station. I'm sure you'll enjoy it. — C.G.



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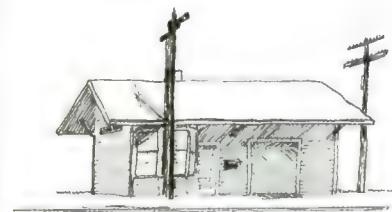
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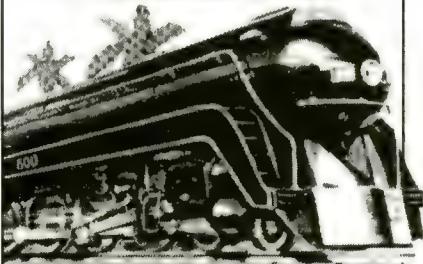
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Product Reviews

► HO scale All-American Service Station



Price: \$42.95

Manufacturer

American Model Builders Inc.
8229 Brentwood Industrial Dr.
St. Louis, MO 63144
www.laserkit.com

Comments: The All-American Service Station is based on a prototype in Harlingen, Texas. This laser-cut wood kit uses tab-and-slot construction and features peel-and-stick doors, windows, and trim; a cast-resin elevated oil tank, soda chest, and oil can rack; and white metal gas pumps. The office has a footprint of 1 1/8" x 2 5/16", and the garage has a footprint of 1 15/16" x 2 1/2".

The garage and office are of American Model Builders' usual high quality. The parts fit well with a minimal amount of filing and sanding. The self-adhesive roofing material makes this phase of construction a breeze.

In addition, the kit includes full-color paper signs for four gasoline companies. There are smaller signs that can be attached to the garage, oil can rack, and soda chest.

The kit was fun to build, and with all the included detail parts, you can easily add a mini scene to your layout. — *Cody Grivno, associate editor*

► Walthers N scale 10-6 sleeper



Price: \$34.98

Manufacturer

Wm. K. Walthers Inc.
P.O. Box 3039
Milwaukee, WI 53201
www.walthers.com

Comments: A well-detailed ready-to-run N scale model of a 10-roomette, six-double-bedroom sleeping car built to Pullman-Standard plan no. 4140 is now available from Walthers.

The model is available with fluted or smooth sides and with or without underbody skirts. A full listing of road names is given on the Walthers Web site.

The N scale sleeper's dimensions, window placement, and interior detail arrangement match

the prototype. Our review sample's paint scheme matches photos of Chesapeake & Ohio lightweight equipment.

The plastic model has crisply molded roof vents, equipment boxes, and other details.

The body is easily removed for installing an interior lighting kit (sold separately). The RP-25 contour wheelsets are in gauge.

The model includes Accumate operating knuckle couplers at the correct height. Weighing just under 1 1/2 ounces, the car follows National Model Railroad Association RP-20.1.

This accurate N scale model is appropriate for layouts from the 1950s to the Amtrak era. — *D.K.*

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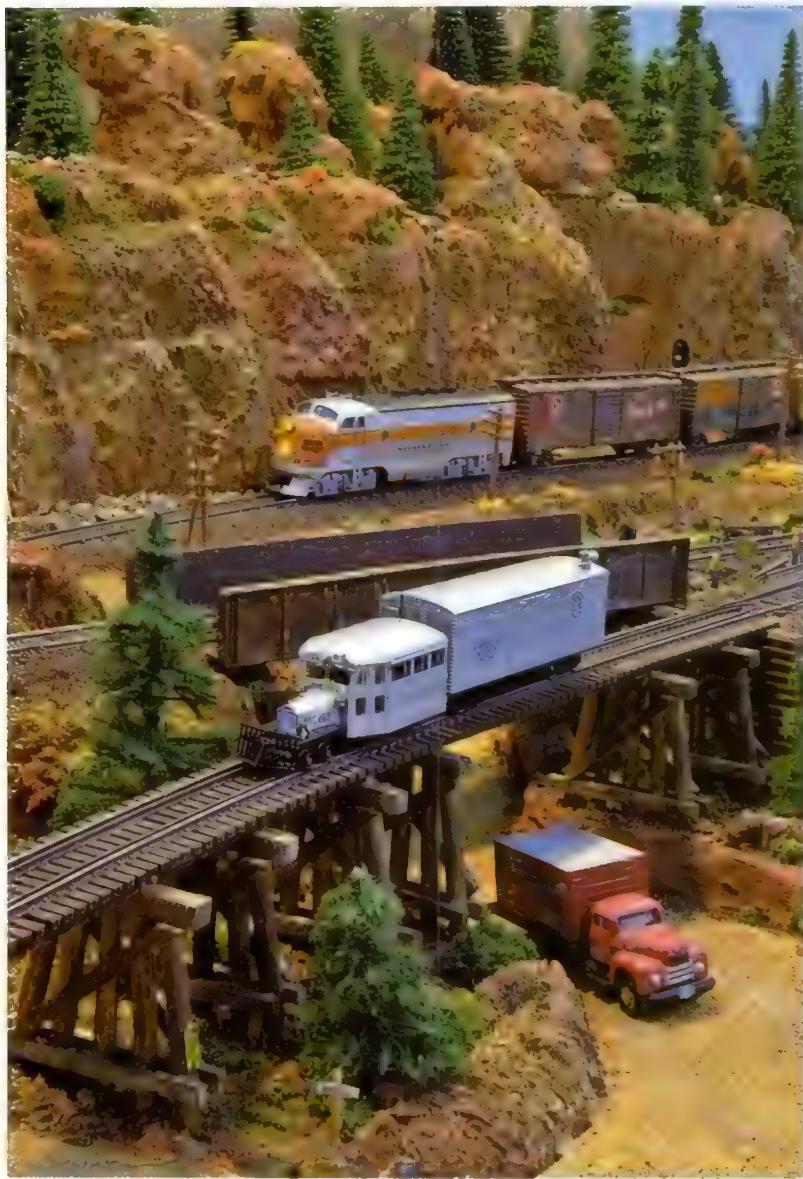


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Galloping Goose no. X-105, a Con-Cor model, crosses a scratchbuilt trestle over Telegraph Road while a manifest freight rumbles past on the nearby Western Pacific main line. The scene takes place on the N scale layout built by Göran Assner of Göteborg, Sweden. He also shot the photo.





New York Central class L-3b
Mohawk no. 3037 leads a
block of meat reefers
eastward through Breakneck
Tunnel in 1941. Nearby, a
couple of railfans have
parked their "woody" station
wagon to photograph the
action. The scene takes
place on the HO scale New
York Central Hudson Divi-
sion layout built by Richard
Stoving. John Heitmann photo

Want to see your work in Trackside Photos?

Trackside Photos is a showcase for the work of *Model Railroader* readers. We encourage contributions. Send your photos (original color slides or digital images 5 megapixels or better on CD-ROM) to: *Model Railroader*, Trackside Photos, P.O. Box 1612, Waukesha, WI 53187-1612. Include caption information, such as a description of what's going on in the picture; the name, scale, era, and locale of the layout; and information about the rolling stock or structures pictured. For a copy of our photo submission guidelines, contact editorial associate Eric Stelpflug at 262-796-8776, ext. 583, or mrmag@mrmag.com.

Trackside Photos



Two Santa Fe steam locomotives haul a mixed freight through the Texas countryside on Charlie Krampitz's Gulf, Colorado & Santa Fe Mid-Texas Division layout. Charlie, of Sealy, Texas, detailed the two BLI models.

Matthew Dittert photo



Switcher no. 4, a Keystone General Electric 44-tonner, pulls a boxcar under a road freight passing overhead on Wolfgang Dudler's HO scale Westport Terminal RR. The freelanced railroad is set in northern Minnesota, and this section is based on a track plan in the November 1985 *Model Railroader*. Wolfgang also took the photo.



Tom Piccirillo of Warren, N.J., built this crane car for his O scale Somerset County Traction System. The car includes a scratchbuilt cab and floor, power truck and underbody details by Wagner, and an Alexander HO scale pillar crane. Tom, whose layout was featured in *Great Model Railroads 2009*, also shot the photo.

All in good time

Tony Koester



Can you spot any detailing shortcomings in these freight cars as MB-98 speeds over Coal Creek at the east end of Veedersburg, Ind., on Tony's HO scale Nickel Plate layout? Tony Koester photo

It's human nature to focus on the task at hand, especially if it's something like putting out a fire or keeping the car headed in a straight line on an icy road. In a model railroad context, we can't do everything at once, so we have to approach the task of building a layout – the primary goal of most modelers, I'll wager – in a reasonably logical, somewhat sequential and focused manner.

But like almost everything else, this is far more difficult than it seems.

Several of my friends, the modelers whose work I admire most and therefore try to emulate, have an unfair advantage over my efforts to model a Midwestern granger railroad in the mid 1950s: They started before I did. From day one, I've been playing a game of catch-up with them. I'm here; they're waaaay over there.

But why should I even try catch up? Well, to some extent, competition is good. It's the very essence of the American Way as we embrace athletic and scholastic and business competition. Put another way, golfing by yourself isn't much fun.

There are limits, however. If winning a blue ribbon in a model contest helps to make you a better modeler, that's good. If beating the

other guy is your main objective, you may have confused hobbies with sports.

My railroad has finally reached the point where all track-laying decisions have been made, checked, and finalized. A few lengths of rail remain to be spiked down, but otherwise my focus has now shifted toward refining what I already have built to improve operational reliability.

To that end, I'm equipping my freight car fleet with metal wheels that roll before a gentle puff of wind. Save for a few heavily weighted brass engines, my steam fleet won't have it any other way; the Mikados and Berkshires simply won't pull 25 to 30 cars equipped with so-so trucks up the continuous westbound spiral between decks.

Many of these cars aren't up to today's lofty standards. We can drop into a hobby shop and head home with a freight car detailed to the nines. But I can't afford to buy hundreds of these cars, so cars built from plastic kits of the 1960s are still doing yeoman service on my NKP.

Some of my friends question why I would claim to be doing sincere prototype modeling, yet run cars with obvious (to them, any way) detail defects. I counter by

challenging them to spot the errors and omissions as such cars whiz by at 55 mph on hot MB-98. I also point out that, should they find themselves in my basement during an operating session, they will have jobs to do, and holding up a magnifying glass to my freight car fleet won't be one of them!

Progress on the Nickel Plate's Third Sub has finally reached the point where I can enjoy sitting down at my workbench and scratch-building or kitbashing structures. I also have some sections of relatively finished scenery. Put another way, the railroad and the equipment that supports its operating scheme work sufficiently well for me to devote some time to the cosmetics.

As I have written before, I feel strongly that one's first efforts should be directed toward getting a model railroad running. Only then will you find what you've omitted and can make corrections at minimum cost and pain. That task accomplished, you can then comfortably move on to structures and scenery, and then to freight car and locomotive detailing.

I have several good-running brass Mikes and Berks that need to be backdated and relettered for the Nickel Plate, a project I am eager to tackle. But such chores have to be kept near the bottom of my priority list until more pressing matters – such as a place to run the finished models – have been attended to.

These tasks will be accomplished, but all in good time. First I was devoted to design and benchwork. Then came subroadbed, backdrops, lighting, and roadbed. Next was, hallelujah, track. The drudgery of wiring soon followed, along with landform scenery and some structures. I'm now adding ground cover and foliage and extra details.

Next to last will be the freight car upgrade program, when my vast collection of resin kits will eventually occupy less space in my storage cabinets and more room on my layout. Finally, I'll get the steam and diesel fleet upgraded to more properly honor their prototypes.

Meanwhile, I have a fully operational railroad in my basement. And that, after all, was my original goal. **MR**

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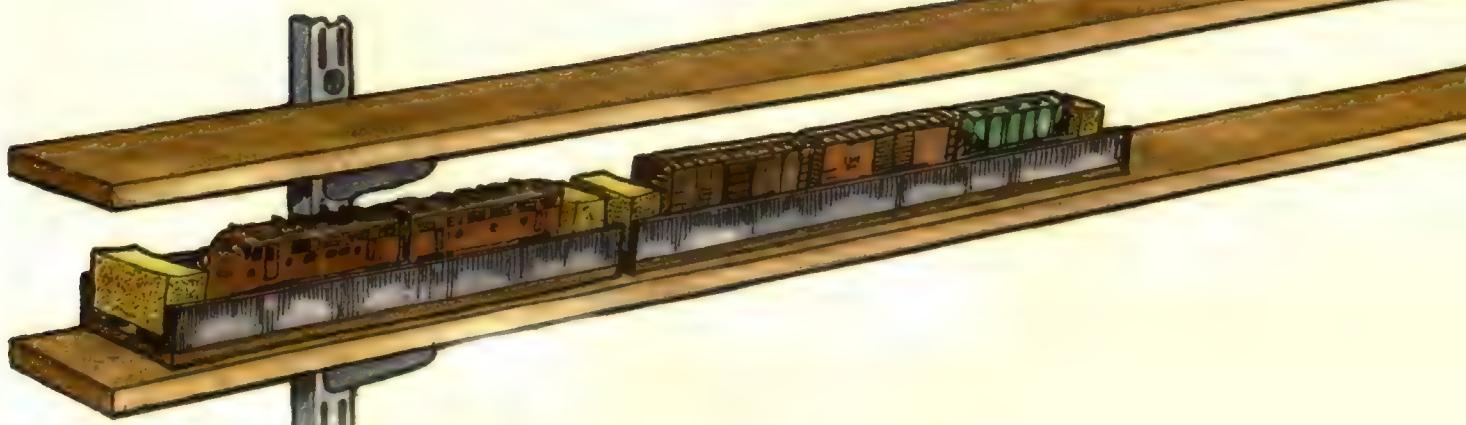
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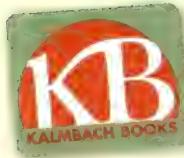
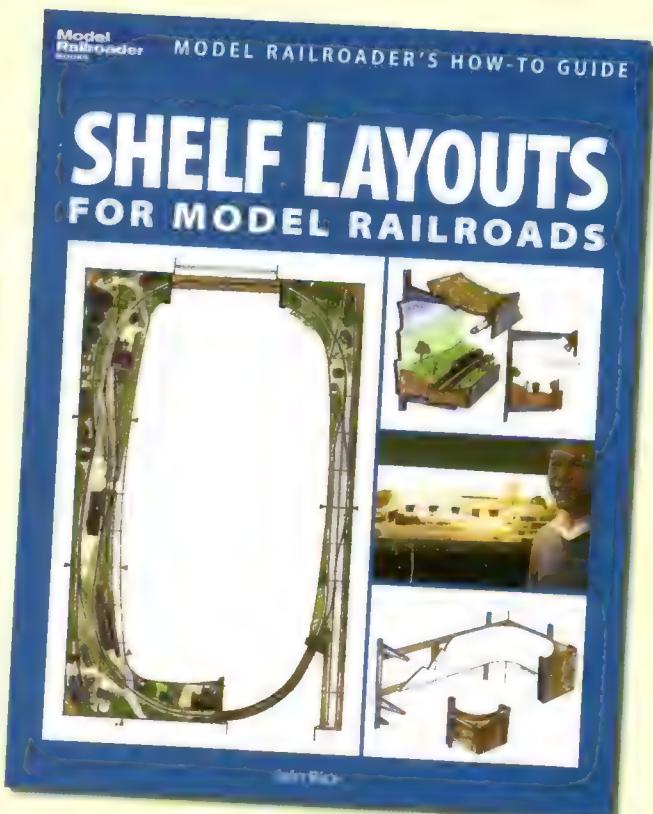
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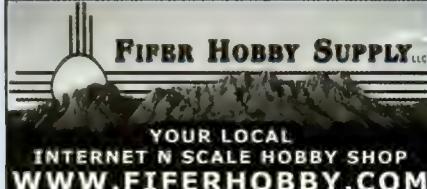
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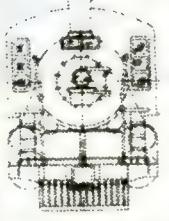
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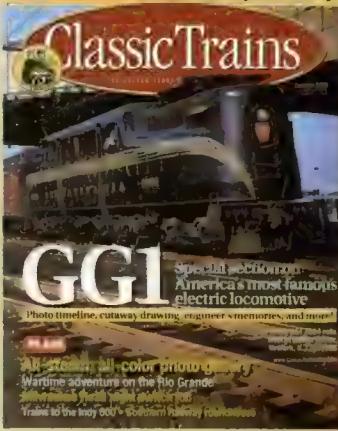
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CLOSING DATES: Jan 2009 issue closes Oct. 17, Feb. closes Nov. 18, Mar. closes Dec. 16, Apr. closes Jan. 16, May closes Feb. 16, June closes Mar. 20, July closes Apr. 17, Aug. closes May 15, Sept. closes June 18, Oct. closes July 17, Nov. closes Aug. 18, Dec. closes Sept. 18.

Note to Readers: Show dates, times and locations sometimes change. Confirm the details before driving any distance. Please go to www.mrrmag.com and click on the **Schedule of Events** section to get more complete information on these and other coming events.

Schedule of Events

AZ, PHOENIX: "IN THE HEAT" SWAP MEET North Phoenix Baptist Church, 5757 N. Central Ave. Sponsored by Roundhouse Rats. Saturday, July 25th, 2009, 9:00am-1:00pm. Adults \$5.00. All gauges, books, tapes, train rail memorabilia, accessories. Handicap accessible, good food. More information contact David Jerry 602-361-0356.

FL, LARGO: SUNCOAST MODEL RAILROAD CLUB TRAIN SHOW AND OPEN HOUSE. Minreg Hall, 6340 126th Avenue. June 13, 2009, 10:00am-4:00pm. Adults \$5.00, children 12-17 \$1.00, under 12 free. Large model train and railroadiana show with over 100 tables. Parking free. www.suncoastmrrc.com for info and flyers.

FL, MELBOURNE: TRAIN & TOY SHOW. Azan Shrine Center, 1591 W. Eau Gallie Blvd. Saturday, June 6, 2009, 9:00am-2:00pm. Adults \$5.00, under 10 free with adult. Questions - Dealer Tables call 321-267-3622 or 321-757-0265.

FL, TALLAHASSEE: BIG BEND MODEL RAILROAD ASSOCIATION. - TALLAHASSEE MODEL RAILROAD SHOW & SALE. North Florida Fairgrounds, building #4; corner of Paul Russell and South Monroe Street. Saturday, June 20th, 2009, 10:00am-5:00pm. \$5 admission, 12 and under are free. Info: John Sullenberger 850-544-1870.

IL, ST. CHARLES: 33RD ANNUAL KANE COUNTY RAILROADIANA SHOW Kane County Fairgrounds, 525 S Randall Rd. Sunday, June 14th, 2009, 10:00am-3pm. Admission: \$6 Tables \$55 For information: 847-358-1185. RussFierce@aol.com or www.RRShows.com

MD, TUMONIUM: GREAT SCALE MODEL TRAIN SHOW. Maryland State Fairgrounds, June 27-28, 2009, Saturday 9:00-4:00pm, Sunday 10:00-4:00pm. Adults \$9.00, family \$18.00, under 15 free, good for both days. 450 vendor tables plus outdoor garden layout and train movies. Free parking. Howard Zane 410-730-1036, hzane1@comcast.net www.GSMTS.com

MN, CROSSLAKE: NORTHERN TRACKERS RAILROAD CLUB TRAIN SHOW, SALE AND SWAP MEET. Crosslake Community Center, 14120 Daggett Pine Road. Saturday, July 25, 2009, 10:00-4:00pm. Admission adults \$3.00, children under 12 free with adult admission. Operating layouts, sale, swap meet, food. Contact Clem Maust 218-765-3106, cmaust@brainerd.net

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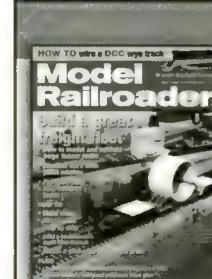
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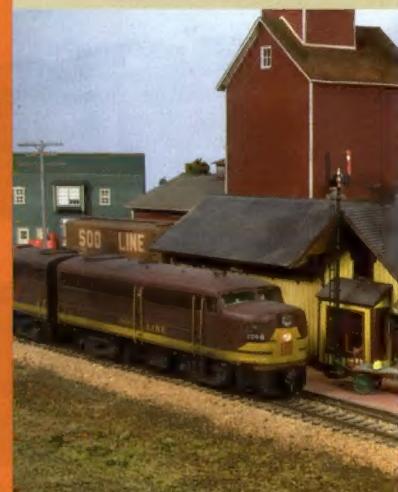
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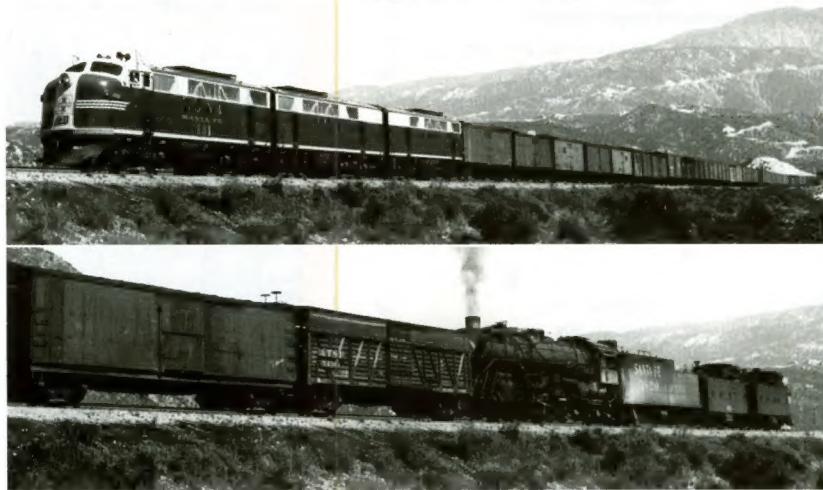
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MAGAZINE

The Operators

Andy Sperandeo



On September 22, 1947, an Atchison, Topeka & Santa Fe freight climbs the west slope of Cajon Pass behind 100-class diesels. A 3800-class 2-10-2 pushes on the rear. The extra way car (caboose) is deadheading east to help with westbound traffic. Robert F. Collins photos, collection of Louis A. Marre

Choosing locomotives for operation – part 1

We all like locomotives, or we wouldn't be here. Some of us, myself included, hardly ever met a locomotive we couldn't like. Yet we don't want our layouts to look more like museum collections than working railroads.

Assembling a locomotive roster to support your railroad's operations adds to your layout's realism if done right. That means following the prototype, especially when you're freelancing.

Prototype example. My approach to a prototypical engine roster is to use the locomotives the real railroad used the way that railroad used them. The trick is that historically any railroad may turn out to be a moving target. In the popular steam-diesel transition era, things were changing all the time. That's why it was a "transition era."

Focusing on a particular location and time is a good way to pin your prototype down. My own layout represents the Atchison, Topeka & Santa Fe line over Cajon Pass in Southern California. The time is the last half of 1947. This is earlier than other transition modelers might

choose, but the Santa Fe completed dieselizing that part of the railroad by the end of 1953.

Freight diesels. In 1947, Electro-Motive FT cab and booster diesel units built before and during World War II hauled most of the freight over the western end of the Santa Fe. The freight diesels then turned back east at San Bernardino, Calif., the western terminal of my layout. The FT was known on the Santa Fe as the 100 class, and my roster includes several sets of them.

Note that in 1947, the 100-class locomotives were the Santa Fe's only freight diesels. The F3s, F7s, and GP7s were all still in the future. I like them, but there are good reasons not to have them, and the reasons are mostly 2-10-2s.

Steam power. The most common steam engines on the Santa Fe's Los Angeles Division in 1947 were the heavy 2-10-2s of the 3800 class. They helped trains with diesel road engines over Cajon Pass and also powered an occasional road freight or local on their own. They also handled many of the trains running

west of San Bernardino to Los Angeles and San Diego.

Built between 1919 and 1927, the 3800s were nearing retirement at the time I model. They had proven better suited to Cajon's operating conditions than the Santa Fe's more modern 2-10-4s, which were all assigned east of Albuquerque, N.M.

The 3800s coexisted with the 100 class for a time, but less so with the 200-class F3 and F7 freighters that began arriving in 1948. After 1951, when the 2650-class GP7s arrived, steam disappeared from Cajon freights except for occasional seasonal use. Finally the 3800s weren't needed even as standbys.

I have a number of HO 3800s that I want to operate in realistic roles. For that reason I'm happy to set my layout in 1947, when there was still lots of work for 2-10-2s.

Passenger power. In the immediate postwar years the Santa Fe bought mostly passenger diesels. It wanted to eliminate helpers on its transcontinental passenger trains by using 6,000-hp sets of Electro-Motive F3s, Alco PAs and PBs, and Fairbanks-Morse Erie-built. The Santa Fe had also assigned 11 of the four-unit, 5,400-hp 100-class locomotives to passenger service.

Since the Santa Fe still ran plenty of passenger trains, there was regular "varnish" work for its 4-8-4s in the 3751, 3776, and 2900 classes. Special movements and added sections of passenger and mail trains were also protected by 4-8-4s and some 3700-class 4-8-2s.

Principles. So my approach has been to acquire models to match the locomotives used by my favorite prototype. But since the Santa Fe was a big system in transition, I've narrowed my focus to the location and time I want to model. Following those principles, I think I've arrived at a roster representative of that particular railroad at that particular time and place.

Can you apply the same principles to a freelance model railroad, representing a fictitious prototype? Yes you can, and I'll share my ideas on that with you next month. **MR**



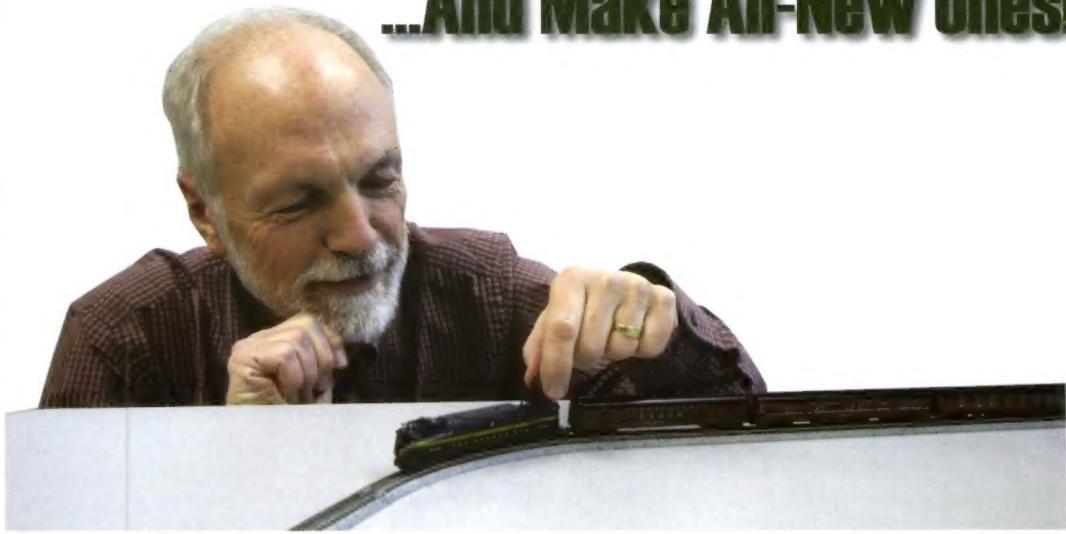
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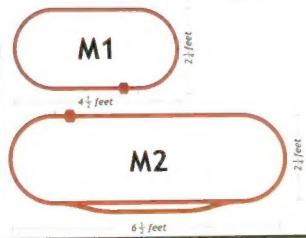


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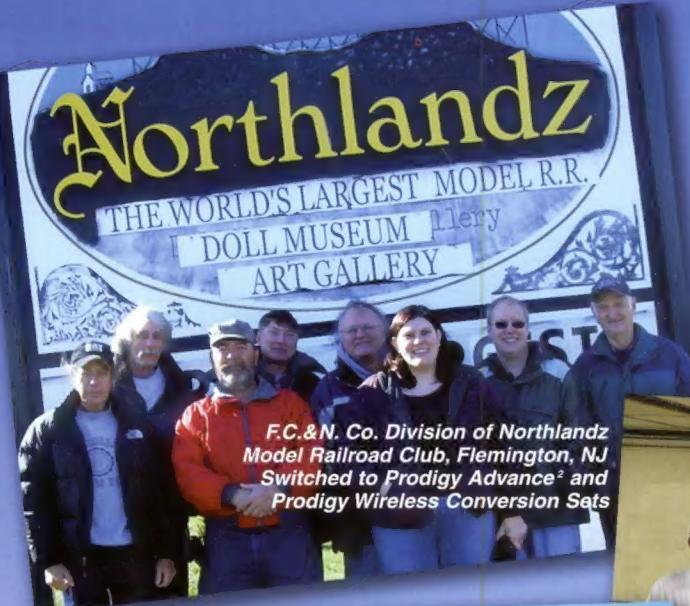
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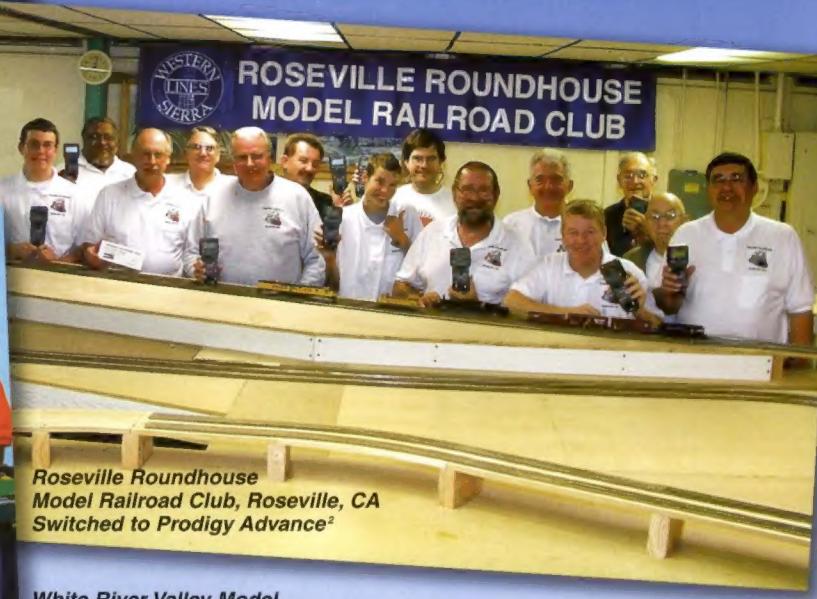


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